

1977



1977 ANNUAL REPORT



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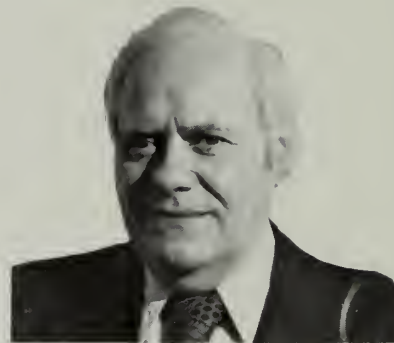
BOARD OF DIRECTORS – 1977



ROBERT R. KILEY
Chairman and Chief Executive Officer



FORREST I. NEAL, JR.



RICHARD D. BUCK



JOHN J. McCARTHY



GUIDO R. PERERA, JR.

NEW MEMBERS OF BOARD OF DIRECTORS – 1978



CLAIRE R. BARRETT
(Replaced Mr. Neal)

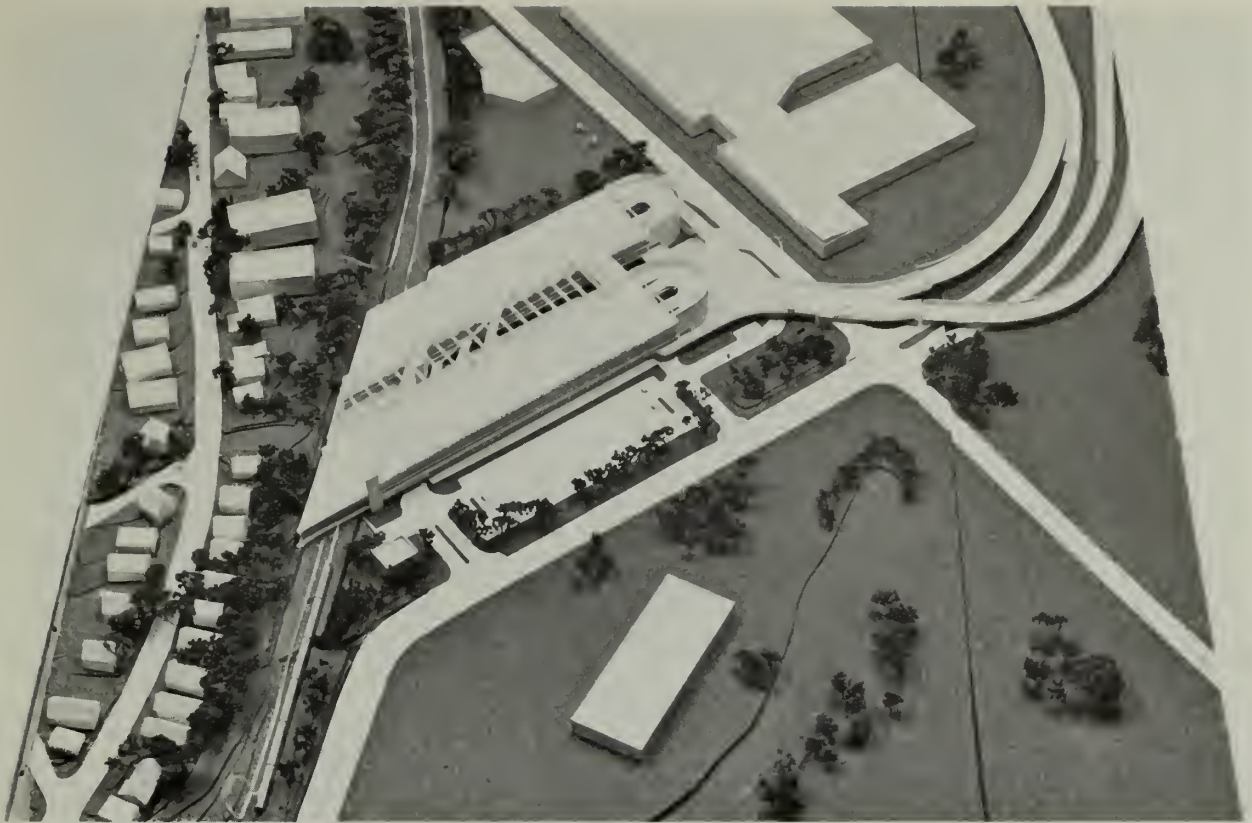


THEODORE C. LANDSMARK
(Replaced Mr. McCarthy)

THE YEAR IN PICTURES



GROUNDBREAKING DAY for the Red Line's new Braintree Station and 1,200-car parking garage was July 13.



MODEL SHOWS Quincy Adams Station and 2,000-car parking garage in South Quincy, intermediate stop between Quincy Center and Braintree Stations.

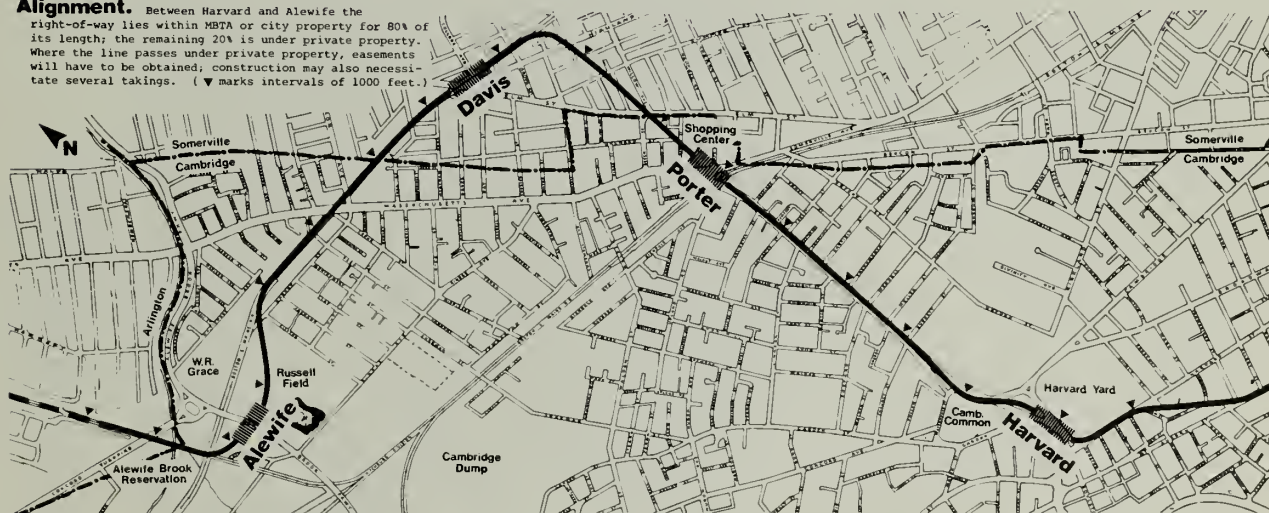


NEW PARKING LOT added 350 spaces at the Red Line's North Quincy Station.

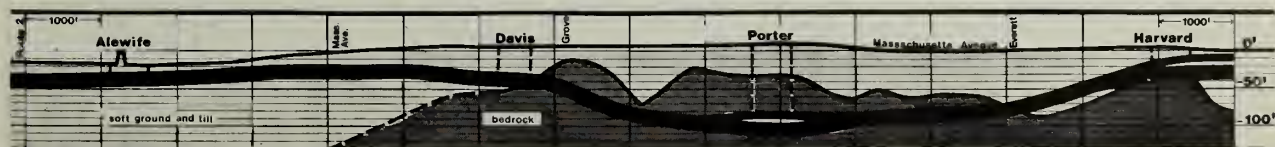


DEPRESSED ROADBED and retaining walls are under construction on the Braintree Extension just south of Quincy Center Station.

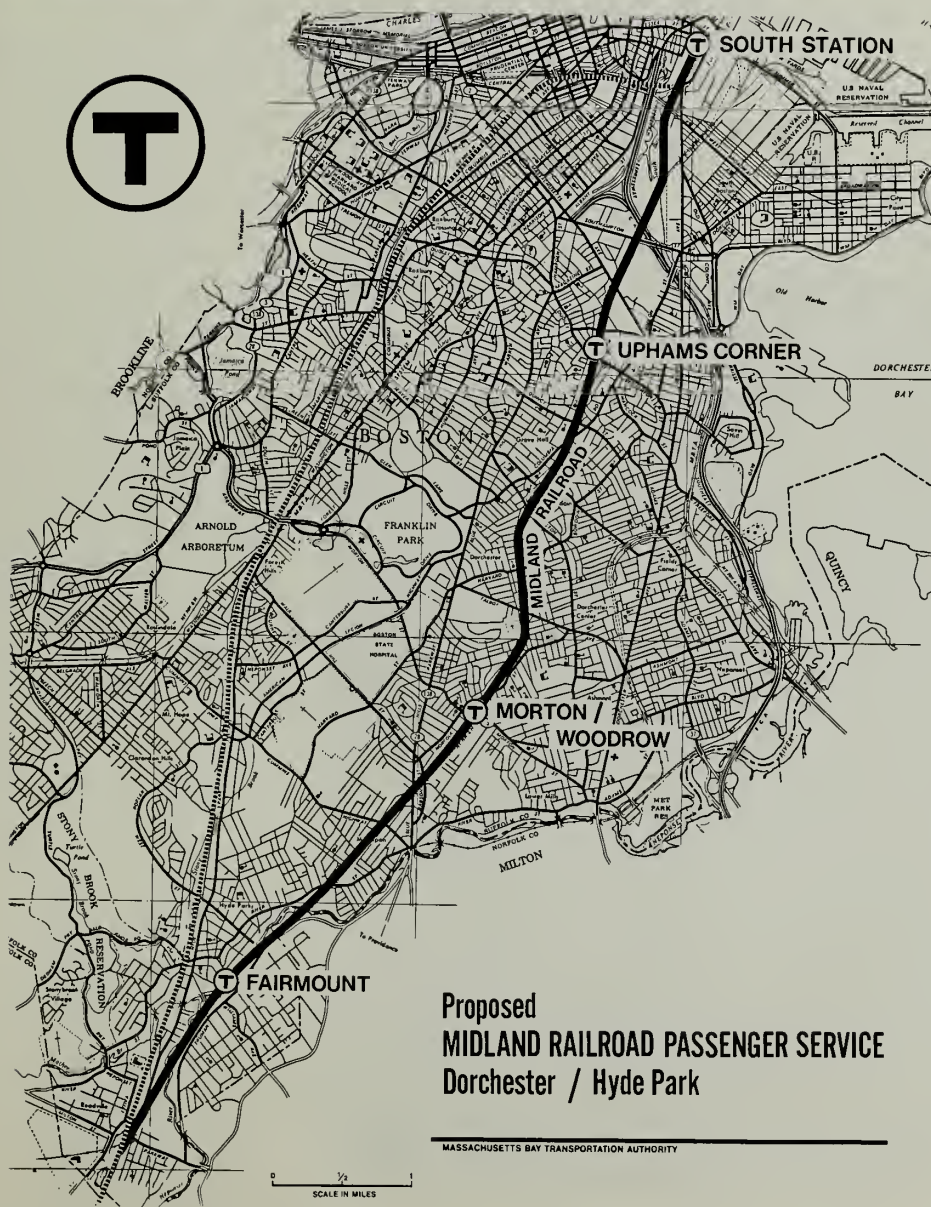
Alignment. Between Harvard and Alewife the right-of-way lies within MBTA or city property for 80% of its length; the remaining 20% is under private property. Where the line passes under private property, easements will have to be obtained; construction may also necessitate several takings. (▼ marks intervals of 1000 feet.)



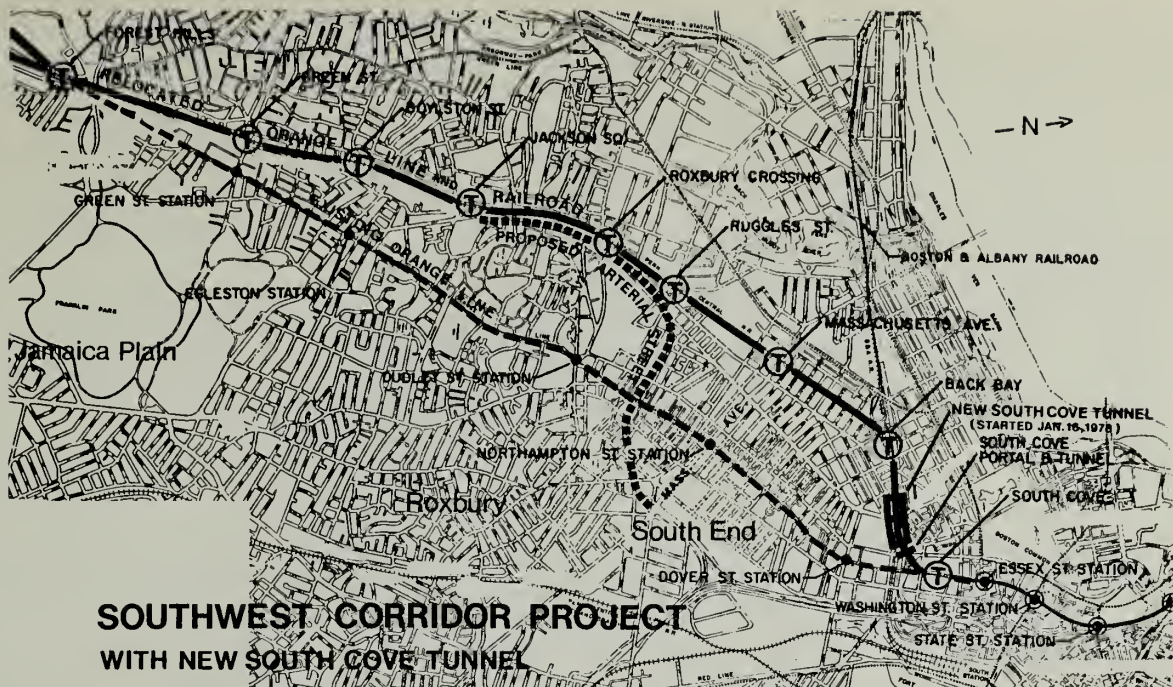
Profile. The tunnel enters bedrock about midway to Porter Square and leaves it just east of Davis, near Grove St. The cut-and-cover segment begins at Davis Square Station. At Harvard and Porter the track is on two levels.



Red Line - Harvard to Alewife



OAK GROVE STATION was opened for Orange Line service on March 19 and dedicated March 21 by, l. to r., Governor Dukakis, Director Neal, Chairman Kiley, Director McCarthy and Secretary Salvucci.



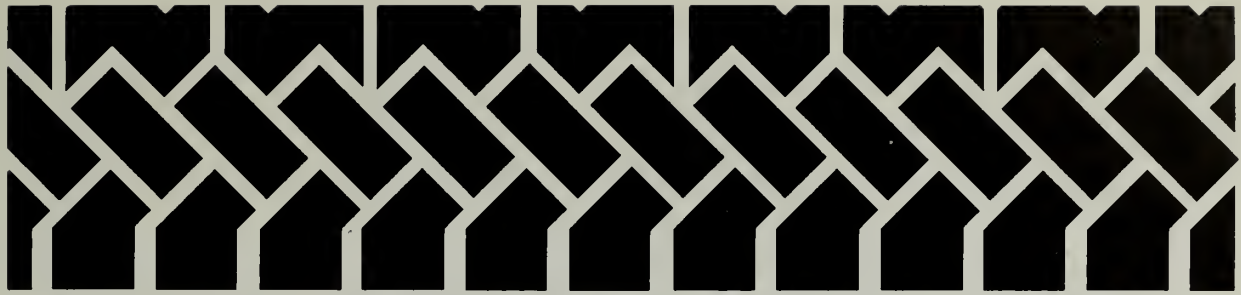
8-INCH WATER MAIN at Chandler Street, Boston, was relocated preparatory to the start of construction of the South Cove Tunnel link between the existing Orange Line and the planned relocated line.



ALUMINUM-CLAD COACH is one of 25 Pullman Standard will manufacture for MBTA commuter railroad service under a contract signed December 7.



TRAIN SERVICE returned to Tufts University Station September 15 with the arrival of a rail diesel car, manufactured by the Budd Company about 20 years ago.



A DOZEN OF OUR BEST FINALISTS IN THE **T** BUS ROADEO

Community Affairs & Marketing

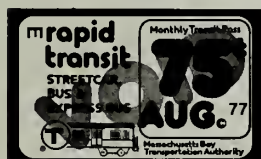
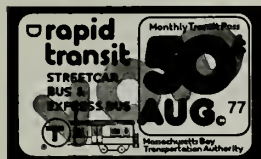
Gus Swanson - Cabot
(Local winner who represented
the **T** at National Roadeo)

Bill Basile - Quincy
Bob Chaffee - Arborway
Bob Cummings - Salem St.
Joe Dooley - Bennett St.

Dennis Ingersoll - Lynn
Henri Jenner - Arborway
Leon Mason - Bennett St.
Peter Messina - Salem St.
Ted Moriello - Lynn
Bill Mudge - Quincy
Joe Rizzitano - Cabot



NEW STYLE navy blue uniform is modeled by "Gus" Swanson, left, wearing the new Winter coat and hat, and Willie Lawrence, wearing the new short jacket. Mr. Swanson who was the winner of the MBTA's first Bus Roadeo in the Summer, is an operator out of the Cabot Garage; Mr. Lawrence is an inspector.



"Take me to the I.C.A.!"

The Institute of Contemporary Art

gallery exhibitions • paintings
sculpture • film • theatre
concerts • dining

955 Boylston St., Boston

Take the greenline **T** to Auditorium station.

2 for 1 admission for MBTA passholders!



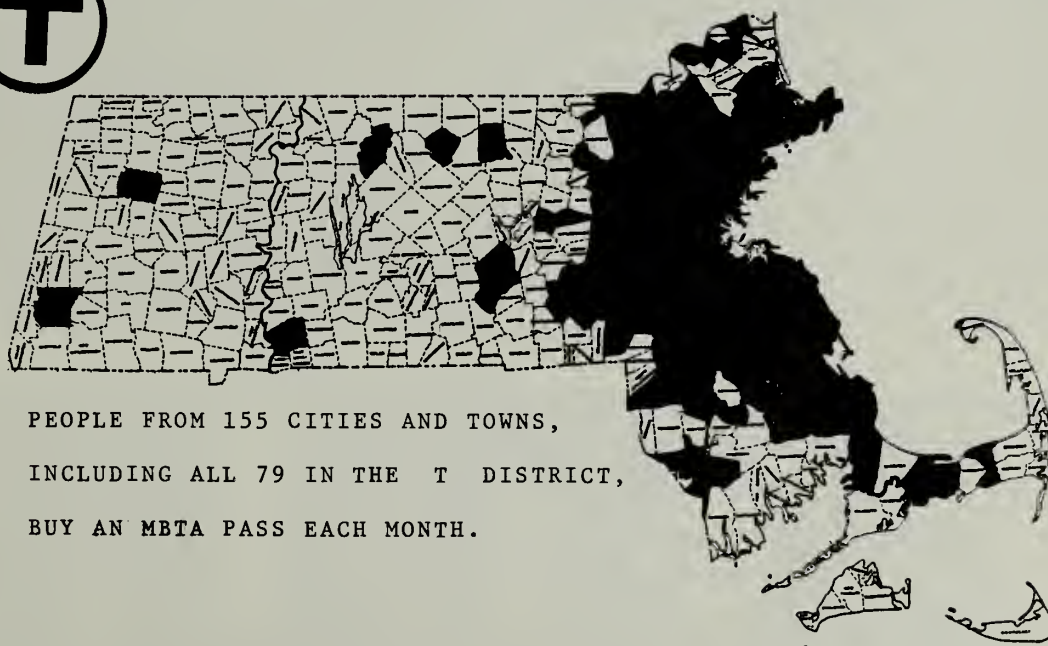
MBTA PASSHOLDERS, using one of these six types of passes, left, increased 54 percent in 1977 while participating employers increased 114 percent. Passholders were offered discounts by the Institute of Contemporary Art, top, and the New England Aquarium, right.

HOW DO YOU GET TO THE AQUARIUM?

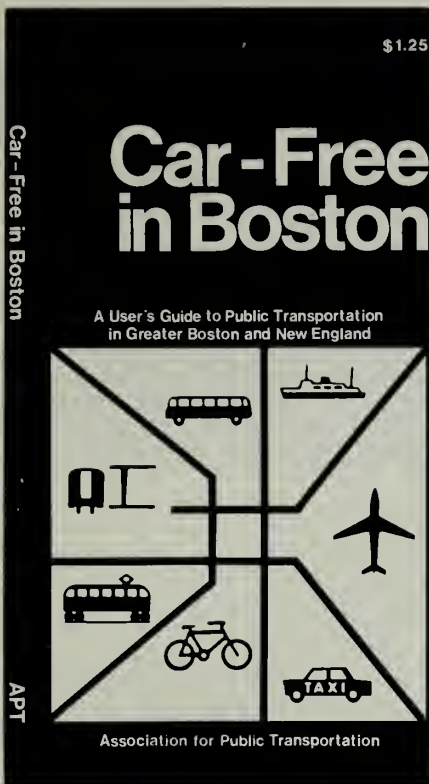


MBTA
Save 50¢
on
Admission
PASSHOLDERS

T TAKE THE BLUE LINE. AQUARIUM STATION.



PEOPLE FROM 155 CITIES AND TOWNS,
INCLUDING ALL 79 IN THE T DISTRICT,
BUY AN MBTA PASS EACH MONTH.



CAR-FREE in Boston, top left, is a paperback guide to public transportation in Boston, published in conjunction with the Association for Public Transportation. The poster, top right, promoted live music at three subway stations. The two car cards, posted in MBTA vehicles, promoted senior citizens' half fares and a "no smoking" campaign, below.

Half a ride on us:

With this card, persons over 65 and the handicapped are entitled to ride for half fare on the MBTA.

For details, call or visit: Senior Citizens/Special Needs Office,
Government Center Station.
Mon.-Fri. 9 a.m.-3:30 p.m.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

Absolutely no ifs, ands or butts.

Mass. Gen. Laws Ch. 272, Sect. 43A

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
Community Affairs & Marketing Dept.



When did you last visit

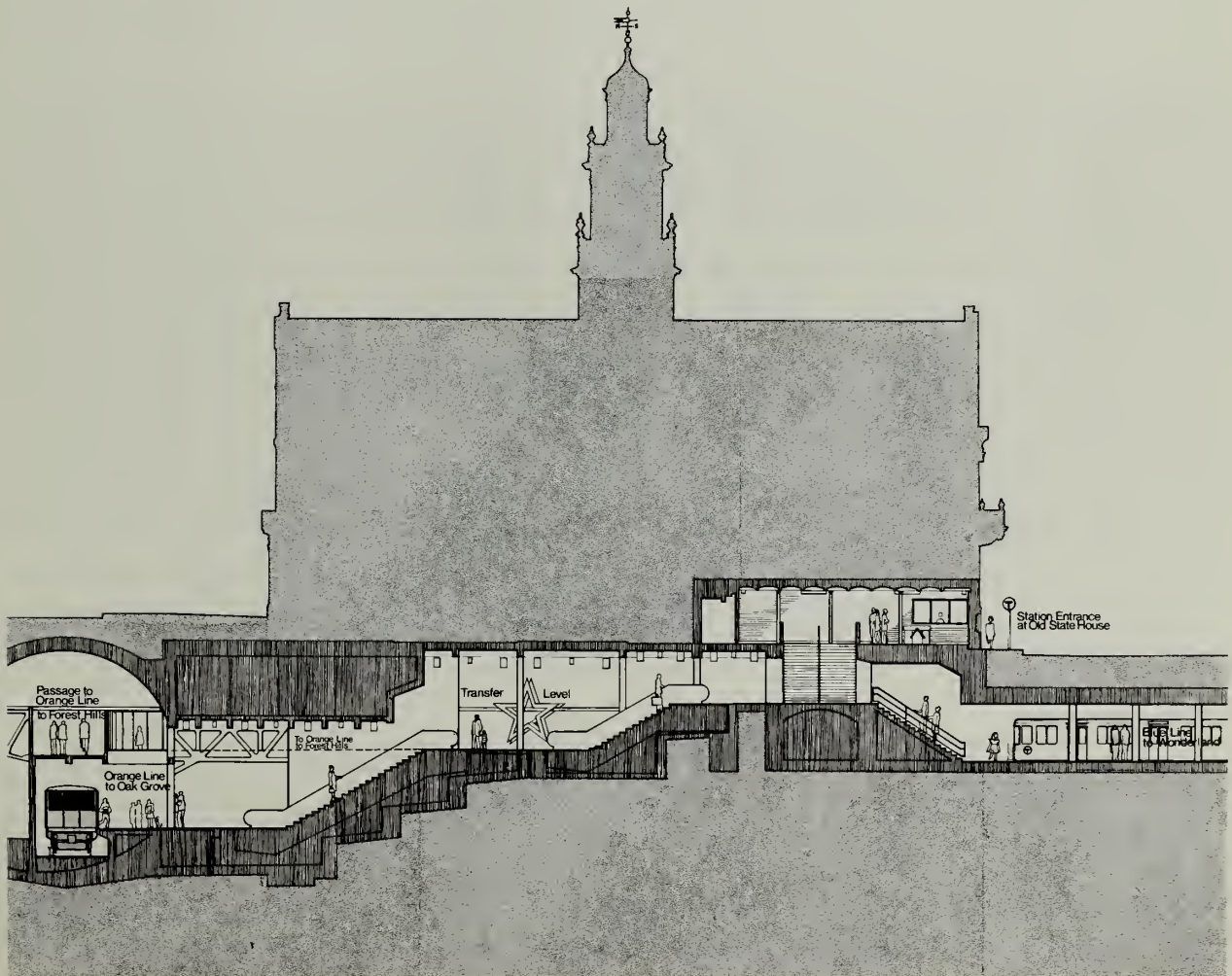
The Old State House?

(It's at STATE on The MBTA.)

Boston
National
Historical
Park

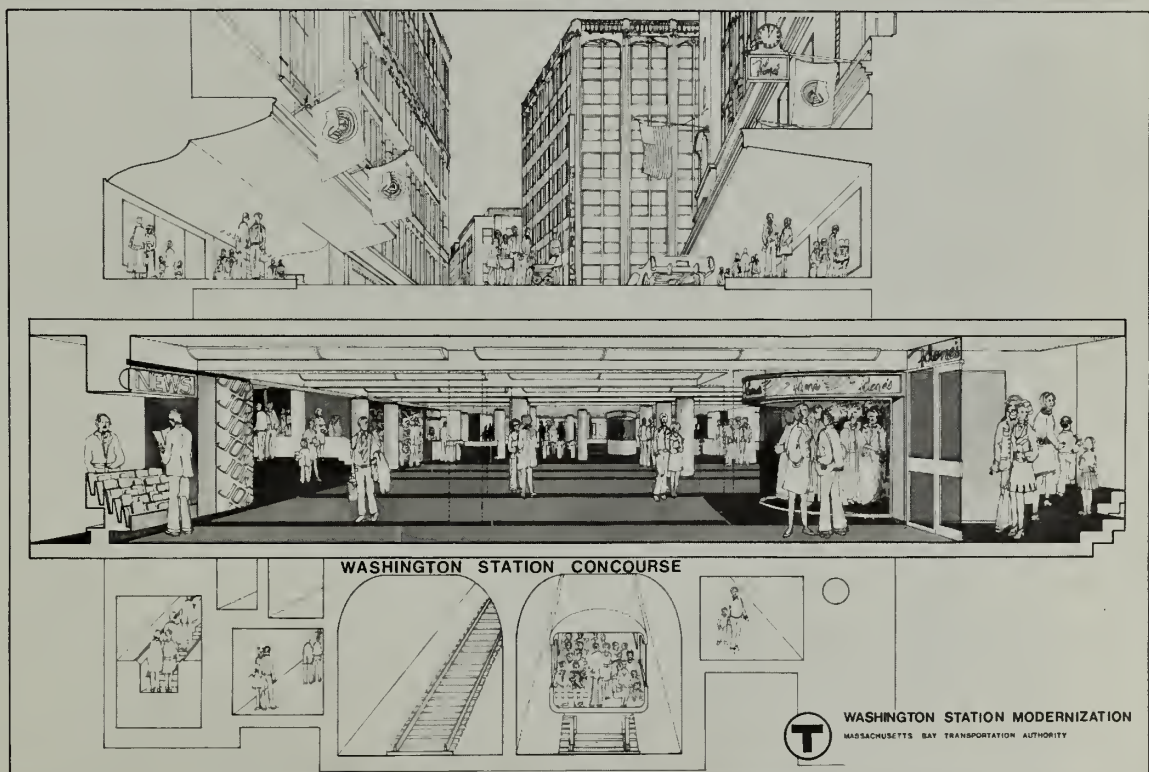


CAR CARD, top, published by the National Park Service, promotes visit to Massachusetts Old State House under which the MBTA's State Station is located. Below, the profile shows the Orange Line tunnel, left, and the Blue Line tunnel, right, beneath the Old State House.





ART AT AUDITORIUM Station depicts a Cambridge and Roxbury streetcar enameled on stainless steel. Modernizing of this Green Line station was completed in August.



NEW CONCOURSE with mini-shopping mall at Washington Station, shown in this artist's drawing, is part of the project to modernize this heavily-patronized station. The profile shows the street level, above, and the Red Line, below.



FOUR GENERATIONS of Boston streetcars were displayed together at the Riverside Carhouse May 5. Left to right, they are: No. 3409, a new Light Rail Vehicle, built by the Boeing Company in 1976; No. 3072, a Presidents' Conference Committee (PCC) car built by the Pullman Company in 1944 for the Metropolitan Transit Authority and rebuilt in 1976 by MBTA engineers and craftsmen at the Watertown Carhouse; No. 5159, a "Type 3" Boston car built for the Boston Elevated Railway in 1907 by the St. Louis Car Company and converted in the 1930s to its current use as an MBTA snowplow, and No. 396, a 25-foot box car on loan to the Public Broadcasting System from the Seashore Trolley Museum, Kennebunkport, Me., and first used by the Boston "El" on its Allston line in 1900.

(Norton D. Clark photo)



1977

THIRTEENTH ANNUAL REPORT

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COVER: MBTA RAIL SYSTEM MAP shows 162 rapid transit and commuter railroad stations. Photos are model of planned Alewife Station on the Red Line Northwest Extension, upper left; new Oak Grove Station on the Orange Line, upper right; Light Rail Vehicle on the Green Line, lower left; and new locomotive ordered for the Purple Line (commuter railroad), lower right.





MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

Board of Directors
50 High Street, Boston, Mass. 02110

March 31, 1978

His Excellency The Governor, The General Court,
The Secretary of Transportation, and the Advisory Board
to The Massachusetts Bay Transportation Authority

The Directors of the Massachusetts Bay Transportation Authority, in accordance with the requirements of Section 5(h) of Chapter 161A of the General Laws, hereby submit the Thirteenth Annual Report of the Authority covering operations for the calendar year 1977.

It is the third Annual Report prepared under the present Chairman and Chief Executive Officer who assumed the responsibilities of both Chairman of the Board of Directors and Chief Executive Officer in 1975, as a result of the General Court's reorganization of the MBTA in 1973. Two board members stepped down early in 1978 after long and dedicated service: Forrest I. Neal, Jr., a member since 1967 and Presiding Officer of the Board in 1973 and 1975; and John J. McCarthy, a member since 1970. They were replaced January 3, 1978 by Claire R. Barrett, representing the Outer 65 Cities and Towns, and Theodore C. Landsmark, representing the Inner 14 Cities and Towns.

The Board would like to emphasize the following points of this 1977 Annual Report:

1. The average weekday ridership on commuter rail, rapid transit, streetcars, buses and trolley buses rose 3.7 percent in 1977, from an estimated 513,400 one-way passengers each weekday in 1976 to an estimated 532,300 one-way passengers each weekday in 1977. New vehicles (the Light Rail Vehicles), a new station on the Haymarket North extension of the Orange Line, the commuter rail alternative to driving, and improvements to the MBTA Pass Program are the principal reasons for the increase.
2. For the second consecutive year, MBTA ridership increased. Also for the second consecutive year, the MBTA did not require a supplementary budget. The Authority completed the year \$3.5 million under its approved 1977 budget. As you are aware, for years prior to 1976 and 1977, ridership had been declining and supplementary budgets had been a tradition.
3. The year also saw an unprecedented commitment of contracts for \$186.9 million--mostly in Federal funds--for capital improvements to the transit system serving America's eighth largest city. (Only seven major American cities have a subway rapid transit system: Boston, New York, Philadelphia, Washington, Cleveland, Chicago and San Francisco.) The capital investments included a record \$104 million in construction contracts for new public transportation facilities, generating about 2,500 man-years of work in the construction industry. Another \$39.8 million was invested in new equipment and material for these capital investments; an additional \$22.6 million was invested in engineering and design of transportation projects; and \$20.5 million was invested in improvements to existing transportation facilities done by MBTA forces or railroad forces.



THE UNIVERSITY OF CHICAGO

DEPARTMENT OF THE HISTORY OF ARTS
AND ARCHITECTURE

OFFICE OF THE DEAN
OF THE FACULTY OF ARCHITECTURE

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF THE HISTORY OF ARTS
AND ARCHITECTURE
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AND ARCHITECTURE
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OF THE FACULTY OF ARCHITECTURE

4. A major expansion of the public transportation network in the Boston area occurred four days before the beginning of 1977, when the MBTA, with Federal grants and loans, purchased the Boston & Maine Corporation's track, equipment and facilities in eastern Massachusetts. Thus, Boston's commuter rail network, which had been permitted to decay over the past three decades as a matter of national policy of stressing the automobile over railroads, finally came completely under public control, through the MBTA. The MBTA had purchased the Penn Central tracks in Massachusetts in 1973. The public takeover of the commuter railroad system occurred more than 58 years after the Public Control Act of 1918 brought the rapid transit system of Boston under public guidance, and nearly 30 years after the formation in 1947 of a regional public transit agency, the former Metropolitan Transit Authority. The public transportation network of Boston now includes 259 route miles of commuter rail and 74 route miles of rapid transit and streetcar rails; 16 route miles of trackless trolleys; and 711.2 route miles of buses; 90 commuter rail stations in 46 communities and 72 rapid transit and streetcar stations in nine communities. With public control, the MBTA was able to save about a million dollars a year by having one rail operator (the Boston & Maine) operate the commuter rail service from both North Station and South Station, and was able to get Federal funds to begin the process of rebuilding a vital regional resource. More than 35 miles of commuter rail roadbed improvements were made on the South Acton Line and the Franklin and Gloucester Branches in 1977. In 1977, the MBTA ordered 25 new Pullman Standard coaches and five new locomotives. All these vehicles--due to arrive beginning in 1978--were funded 80% by Federal funds from the Urban Mass Transportation Administration.

5. The positive reaction of the public to new vehicles, new facilities and new programs is encouraging as we contemplate more improvements in 1978: the first of 70 new Blue Line cars will arrive this Fall to replace the 1923 and 1952 cars that have served the people of East Boston and Revere for so long; more LRVs will be going into service on all four branches of the Green Line; new commuter rail vehicles will be arriving; and 90 more new buses will be arriving in 1978. In 1979, the first of 120 new Orange Line cars will be arriving in Boston and the MBTA hopes to open the Red Line South Shore extension from Quincy Center to Braintree Station. Another order of 90 to 100 buses is expected. Combined with a program to rebuild 50 of the old Green Line streetcars and all 88 of the 16-year-old blue-painted Red Line cars on the Harvard-Ashmont route, all the rapid transit rail vehicles should be either new or rebuilt in 1981.

6. Improved systems, procedures and more efficient working space were quieter accomplishments of 1977 which continued the internal improvements of the previous two years. Crime dropped for the second straight year. After a 25 percent decrease in various crimes in 1976, there was a further 21 percent decrease in the same crimes in 1977. Following an arbitration, management won the right to give qualifying tests to carhouse repairmen (third class) rather than determine whether they would repair vehicles simply because they were senior employees, regardless of their mechanical aptitude or skill. New supervision and some renovations to the 19th century Reservoir Carhouse created more efficient work space and habits, which paid dividends in the quicker recovery of the old Green Line streetcars after the Storms of the Century in January and February of 1978. Administrative offices were centralized at 50 High Street in Boston, across the street from the Operations Center in a May, 1977 move which increased management efficiency and communication. A new lottery system was instituted in June to select entry-level jobs, such as bus or streetcar operator, porter or collector, resulting in an increase in the number of women and minorities holding these jobs.

Employee morale received a boost through the first Annual Bus Roadeo, which selected the top surface division employee by driving ability and general record; by the introduction of a new uniform to replace the 1963-style uniform; and through pride in the performance, and public acceptance, of the Light Rail Vehicles. Two steps toward the development of a better information system were taken in 1977. An expanded Customer Service telephone system was established with a new number, 722-3200. The number was widely publicized, and circuits overloaded during crises, but the capability to answer calls was increased twenty times. Another improvement in information to passengers came with a new position at Central Control in the Community Affairs Department, filled by a veteran transportation department employee. He is solely responsible for making announcements in stations to inform passengers about the transportation service.

OTHER HIGHLIGHTS OF 1977

Light Rail Vehicles Meet Goal

The Light Rail Vehicles (LRVs), the first new generation of American streetcars since 1952, were first introduced to the Green Line's Riverside Branch in the snowstorm of December 30, 1976. Major problems began to show up in April 1977 and the manufacturer, Boeing Vertol, and the MBTA then worked out a "modification program" to improve the vehicle. By the end of the year, the modification program had met the goal of having 80 percent of the LRVs in service during rush hours. The response by riders to the new vehicles was encouraging. Revenue figures showed a 19% increase in riders on the Riverside Line. The cars were universally praised for the smoothness and quiet of the ride. The Riverside Line had both the old PCC streetcars—designed by the Presidents' Conference Committee of presidents of transit companies throughout the nation in the 1930s--and the LRVs in mixed service until mid-December, but many people would let a PCC streetcar go by in order to catch an LRV in the subways. The LRVs also were used to give added service from the tunnel entrance at Commonwealth Avenue and Blandford Street, near Boston University, through the subway to Park Street, Government Center or Lechmere.

Pass Program Grows

Improvements in the MBTA Pass Program also brought in new riders. After an experiment with a higher monthly cost and greater travel restrictions cut passholders from 22,000 in 1976 to 14,000 in March 1977, the pass was made less costly and more convenient. Enrollment by the end of the year had swelled to 23,531 with 518 employers. About one out of 12 riders was a passholder at the end of the year. The Pass Program bases the monthly cost on 18 days of commuting but permits unlimited use at anytime. Fifteen employers are now subsidizing the pass as a fringe benefit to their employees. Commuter rail customers were provided with a free 25¢ rapid transit pass on the back of their commuter rail monthly commutation ticket beginning in April. Sales went up following that move, which permitted riders a free transfer at North Station, South Station and Back Bay Station and use of the 25¢ rail system whenever they wished. Ridership on commuter rail increased about three percent despite the poor state of the trains, many of which operated without heat or lights because there was such a demand for commuter rail transportation.

The first part of the paper discusses the importance of the study and the objectives of the research. It also mentions the scope of the study and the limitations. The second part of the paper discusses the methodology used in the study. It mentions the data sources and the statistical methods used. The third part of the paper discusses the results of the study. It mentions the findings and the conclusions. The fourth part of the paper discusses the implications of the study. It mentions the policy recommendations and the future research.

The study was conducted in a systematic and rigorous manner. The data was collected from a large sample of respondents. The statistical methods used were appropriate for the data and the research objectives. The results of the study are presented in a clear and concise manner. The findings are discussed in detail and the conclusions are drawn based on the evidence. The implications of the study are discussed and policy recommendations are provided. The study is a valuable contribution to the field of research and it provides useful insights into the issues being studied.

The study has several strengths and limitations. One of the strengths is the large sample size, which increases the reliability of the results. Another strength is the use of a variety of data sources, which provides a more comprehensive view of the issues. However, there are also some limitations to the study. One limitation is the cross-sectional design, which does not allow for the study of changes over time. Another limitation is the self-reported data, which may be subject to bias. Despite these limitations, the study provides valuable insights into the issues being studied and it is a useful reference for researchers and policymakers.

Public Investments

The LRVs and Oak Grove Station are two of the benefits of the extensive public investment program by the Federal, state and local taxpayers. Since 1975, more than \$498 million in Federal grants and loans have been approved, compared to \$348 million between 1964 and 1974. This capital investment generally has ranged from 67 percent to 80 percent in Federal funds, with the balance in 40-year state construction bonds authorized by the Massachusetts Legislature. In 1977, construction on the \$90 million South Shore Extension from Quincy Center to Quincy Adams Station in South Quincy and Braintree Station in South Braintree was finally started. An agreement was reached with Quincy officials to depress a portion of track in that city. In January, then Secretary of Transportation William Coleman made a commitment in principle to transfer \$300 million in Interstate Highway Funds--reserved for Massachusetts' now defunct I-95 and I-695 Inner Belt highways--to pay for the Red Line Northwest and the Southwest Corridor Orange Line projects. The \$450 million Red Line Northwest Extension project itself was approved for construction to Alewife. Construction in late December began on the temporary Harvard Station at Brattle Square in Cambridge, necessary to permit the new tracks to curve up Massachusetts Avenue towards Porter Square, and then on to Davis Square in Somerville and Alewife Station in Cambridge, near the Arlington and Belmont lines. Following studies, and a controversy in the Town of Arlington, the Federal government said engineering for rapid transit towards Arlington should be continued but requested that lower cost alternatives to rapid transit also be studied. Construction began on a contract to upgrade the Midland railroad between Readville and South Station. It is required as a substitute for the main line beginning in 1979 when the Orange Line relocation work will force the closing of the main line tracks from Readville through Back Bay Station. Community requests for new stops at relatively low fares along the Midland Branch were found to be feasible within the commuter rail fare policy and the construction budget. Three stops will be built at Hyde Park/Fairmount, Morton Street/Woodrow, and Uphams Corner. Work also began on a \$20 million contract to build the second half of the South Cove Tunnel, which was first built in the late 1960s when the entire South Cove area was being redeveloped by Tufts University and the City of Boston. The South Cove Tunnel will connect the Orange Line subway to the Southwest Corridor. Engineering and design work continued on the Southwest Corridor Orange Line project and its eight proposed new stations. Station modernization work was completed on the Haymarket Station and the Auditorium Station, and work was proceeding on the Park Street, State Street and the Washington Street modernization. A total of \$64 million is planned to be invested in track, structures, station and information improvements. Major projects to rebuild and upgrade the MBTA's electric power system got underway, as did a major new bus garage and repair facility at Charlestown.

B & M Takes Over South Station Service

On January 7, 1977, Conrail posted notices that it would discontinue its operation of the South Station commuter rail service unless the MBTA increased the subsidy by an amount 92 percent higher than had been paid to Penn Central. The MBTA, seeking to continue the service at less cost, began negotiations with other carriers. On February 18, Conrail pledged its cooperation for a smooth takeover of the service by another rail operator, and on February 22, the MBTA selected the Boston & Maine as the operator for the South Station service as well as the North Station service it had always operated. On Sunday and Monday, March 13-14, service was suspended and the MBTA arranged substitute Monday transportation with private bus companies. On March 15, the Boston & Maine Corporation, under a new contract with the MBTA which saved the public money on both the North Station and South Station operations, began running all commuter rail service.

SUMMARY OF THE NET COST OF SERVICE
JANUARY 1, 1977 - DECEMBER 31, 1977

The Authority's net assessable cost of service to the 79 cities and towns, which will be assessed to them in November, 1978, was \$141,706,566.16 as of this date. It must be noted that this amount could be reduced -- to \$78,974,566.16 -- by additional state aid of \$62,732,000. which is awaiting action (House Bill No. 1) by the General Court. Such additional state aid was received in 1973, 1974, 1975 and 1976.

Total income in 1977 amounted to \$61,813,270.75 and total current expenses were \$247,753,922.36 leaving a cost of service in excess of income of \$185,940,651.61.

The difference between the cost of service in excess of income and the net assessable cost of service resulted from state reimbursement for the Authority's debt service; additional state aid for the railroad service outside the MBTA district; and Federal Operating Assistance of \$22,200,066.

In addition to the net assessable cost of service, there are two other items which must be considered by the 79 cities and towns in their settlement in November, 1978 of their 1977 accounts with the Commonwealth. These are the accounts:

	WITHOUT ADDITIONAL STATE AID	WITH ADDITIONAL STATE AID OF \$62,732,000. AS PROVIDED IN HOUSE BILL NO. 1
Net Assessable Cost of Service	\$141,706,516.16	\$78,974,566.16
Interest Charged by State Treasurer on Temporary Borrowings (Estimated)	\$ 5,290,000.00	\$ 5,290,000.00
Expenses of Boston Metro- politan District	\$ <u>16,000.00</u>	\$ <u>16,000.00</u>
Net Cost to Communities	\$147,012,516.16	\$84,280,566.16*

*House Bill No. 1, the state budget for Fiscal Year 1979 beginning July 1, 1978, provides additional contract assistance of \$62,732,000., subject to legislative approval and appropriation.

The following page shows the Authority's net cost of service including all elements of cost for calendar year 1977.

The first of these is the question of the origin of the human race. It is generally admitted that the human race is descended from a common ancestor, but the question of the exact nature of this ancestor is still a matter of debate. Some authorities believe that the human race is descended from a single pair of individuals, while others believe that it is descended from a larger number of individuals.

The second question is the question of the development of the human race. It is generally admitted that the human race has developed from a lower state to a higher state, but the question of the exact nature of this development is still a matter of debate.

The third question is the question of the distribution of the human race. It is generally admitted that the human race is distributed throughout the world, but the question of the exact nature of this distribution is still a matter of debate.

The fourth question is the question of the classification of the human race. It is generally admitted that the human race can be classified into different groups, but the question of the exact nature of this classification is still a matter of debate.

The fifth question is the question of the measurement of the human race. It is generally admitted that the human race can be measured in different ways, but the question of the exact nature of this measurement is still a matter of debate.

The sixth question is the question of the influence of the human race. It is generally admitted that the human race has a great influence on the world, but the question of the exact nature of this influence is still a matter of debate.

The seventh question is the question of the future of the human race. It is generally admitted that the human race has a future, but the question of the exact nature of this future is still a matter of debate.

The eighth question is the question of the present of the human race. It is generally admitted that the human race has a present, but the question of the exact nature of this present is still a matter of debate.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

STATEMENT OF NET COST OF SERVICE
CALENDAR YEAR JANUARY 1, 1977 TO DECEMBER 31, 1977

	<u>1977</u>
Income:	
Revenue from Transportation	\$ 53,472,738.57
Revenue from Other Rwy. Operations	1,964,693.92
Non-Operating Income	4,579,221.02
Gas & Diesel Tax Reimbursement	412,469.05
Reimbursement from Outside District	<u>1,384,148.19</u>
TOTAL INCOME	61,813,270.75
Operating Wages and Fringe Benefits:	
Wages	115,740,938.71
M.B.T.A. Pensions	15,643,047.68
Social Security Taxes	5,952,721.52
Workmen's Compensation	1,735,564.32
Accident and Sickness Insurance	402,826.30
Group Life Insurance	871,645.18
Blue Cross - Blue Shield	12,119,459.58
Unemployment Insurance	15,736.00
Uniform and Work Clothes	278,211.19
Fringe Benefit Cost Capitalized - Credit	<u>(2,883,560.25)</u>
TOTAL OPERATING WAGES AND FRINGE BENEFITS	149,876,590.23
Material and Other Items	20,023,266.41
Injuries and Damages	2,517,864.02
Interest on Unfunded Debt	4,461,450.52
Fuel	13,134,718.00
Taxes (Other than included above)	764,170.39
Railroad Commuter Subsidy	26,691,776.45
Rapid Transit Inc. Subsidy	<u>417,645.20</u>
TOTAL OPERATING EXPENSES AND TAXES	217,887,481.22
Fixed Charges:	
Interest on Funded Debt (M.T.A.)	3,833,838.61
Interest on Funded Debt (M.B.T.A.)	14,240,309.11
Payment on Funded Debt (M.T.A.)	3,219,259.28
Payment on Funded Debt (M.B.T.A.)	8,501,748.25
Cambridge Subway Rental (M.T.A.)	5,758.32
Miscellaneous Debits (M.T.A.)	35,038.71
Bank Service Charges (M.B.T.A.)	<u>30,488.86</u>
TOTAL FIXED CHARGES	29,866,441.14
TOTAL CURRENT EXPENSES	247,753,922.36
COST OF SERVICE IN EXCESS OF INCOME	185,940,651.61
Less:	
State Fin. Contract Assistance:	
Chapter 161A of G.L. (Sec. 28)-M.T.A.	3,000,000.00
Chapter 161A of G.L. (Sec. 28)-M.B.T.A.	18,532,454.88
Chapter 859, Acts of 1975 - M.B.T.A.	-
Chapter 283, Acts of 1976 - M.B.T.A. (RR)	295,068.57
Chapter 363A, Acts of 1977-M.B.T.A. (RR)	206,496.00
Chapter 363A, Acts of 1977 - M.B.T.A.	-
House Bill #1 Pending Approval	62,732,000.00
Federal Operating Assistance:	
Section 5	16,861,566.00
Section 17	<u>5,338,500.00</u>
TOTAL ASSISTANCE	106,966,085.45
NET ASSESSABLE COST OF SERVICE	\$ <u>78,974,566.16</u>

The balance sheet and statement of long-term debt of the Massachusetts Bay Transportation Authority as of December 31, 1977, and the related statements of revenue and cost of service, unreimbursed cost of service, and source of disposition of funds for the fiscal year ended December 31, 1977, together with notes relating to these financial statements, are appended to this report.

Respectfully submitted, March 31, 1978

Board of Directors

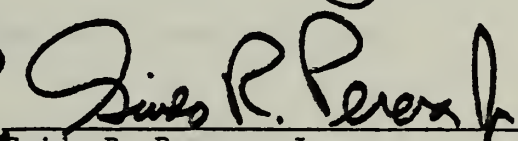
Massachusetts Bay Transportation Authority



Robert R. Kiley, Chairman



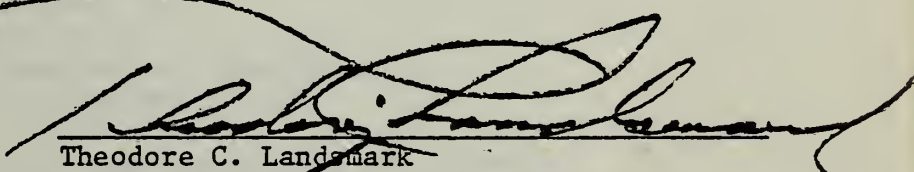
Richard D. Buck



Guido R. Perera, Jr.



Claire R. Barrett



Theodore C. Landsmark

THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY
530 SOUTH EAST ASIAN AVENUE
CHICAGO, ILLINOIS 60607
TEL. 773-936-5000
FAX 773-936-5000

1995

1-15-95

1-15-95

Ⓣ STATISTICS 1977

Population of 79 Communities in (T) District (1970 U.S. Census) 2,763,410
 The (T) operates about 1,400 vehicles travelling 150,000 miles each weekday.

Number of Bus Routes	177
Number of Streetcar Routes	5
Number of Rapid Transit Routes	3
Number of Trackless Trolley Routes	4
Number of Commuter Rail Routes	10
Buses	954
Streetcars (244) and Light Rail Vehicles (65)	309
Rapid Transit Cars	334
Trackless Trolleys	50
Commuter Rail Vehicles: 23 Locomotives; 84 Coaches; 92 Rail Diesel Cars	199

Weekday Passengers (Estimated)	532,300
Commuter Rail	31,000
Basic (T) System -	501,300
Annual Passengers (Estimated)	154,540,000
Commuter Rail -	7,840,000
Basic (T) System -	146,700,000

Rapid Transit Stations, Including Riverside & Mattapan Lines	72
Commuter Rail Stations	90
Miles of Track (2-way) in Subway	30
Miles of Track (2-way) on Bridges, Elevated or Surface	90
Rapid Transit Route Miles (One Way)	38.9
Red Line: Harvard-Ashmont, 9.5; Harvard-Quincy, 11.7	
Orange Line: Forest Hills-Oak Grove, 10.9	
Blue Line: Bowdoin-Wonderland, 6.8	
Rapid Transit Route Miles Under Construction (One Way), 6.4	
Proposed Rapid Transit Route Miles (One Way), 9.1	
Streetcar Route Miles (One Way)	35.1
Riverside-North Station, 12.5; Arborway-Park, 5.5; Lake Street-Lechmere, via Commonwealth Ave., 8.0; Cleveland Circle-Lechmere, via Beacon Street, 6.6; Ashmont-Mattapan, 2.5	
Trackless Trolley Route Miles (One Way)	15.75
Bus Route Miles	711.2
Commuter Rail Route Miles (One Way)	259
North Station: to South Acton, 25; to Lowell, 25; to Woburn, 10; to Reading, 12; to Ipswich, 28; to Rockport, 35.	
South Station: to Framingham, 21; to Needham, 12; to Franklin, 28; to Stoughton, 19; to Providence, 44.	
Commuter Rail Route Miles Under Construction (One Way), 6.9	

Total Route Miles Operated	1,059.95
----------------------------	----------

Bus Revenue Miles	22,564,151
Rapid Transit Revenue Miles	10,291,379
Streetcar Revenue Miles	5,167,125
Trackless Trolley Revenue Miles	865,803
Total Revenue Miles Operated	38,888,458
Commuter Rail Car Miles	5,231,788

Employees	6,344
(Capital Budget: 387;	
Operating Budget: Permanent & Temporary - 5,957)	
Collective Bargaining Units	28

THE UNIVERSITY OF CHICAGO

OFFICE OF THE DEAN

CHICAGO, ILLINOIS

January 10, 1914

Dear Sir:

I have the honor to acknowledge the receipt of your letter of the 7th inst.

and in reply to inform you that the same has been forwarded to the proper authorities for their consideration.

I am, Sir, very respectfully,
Yours truly,
The Dean

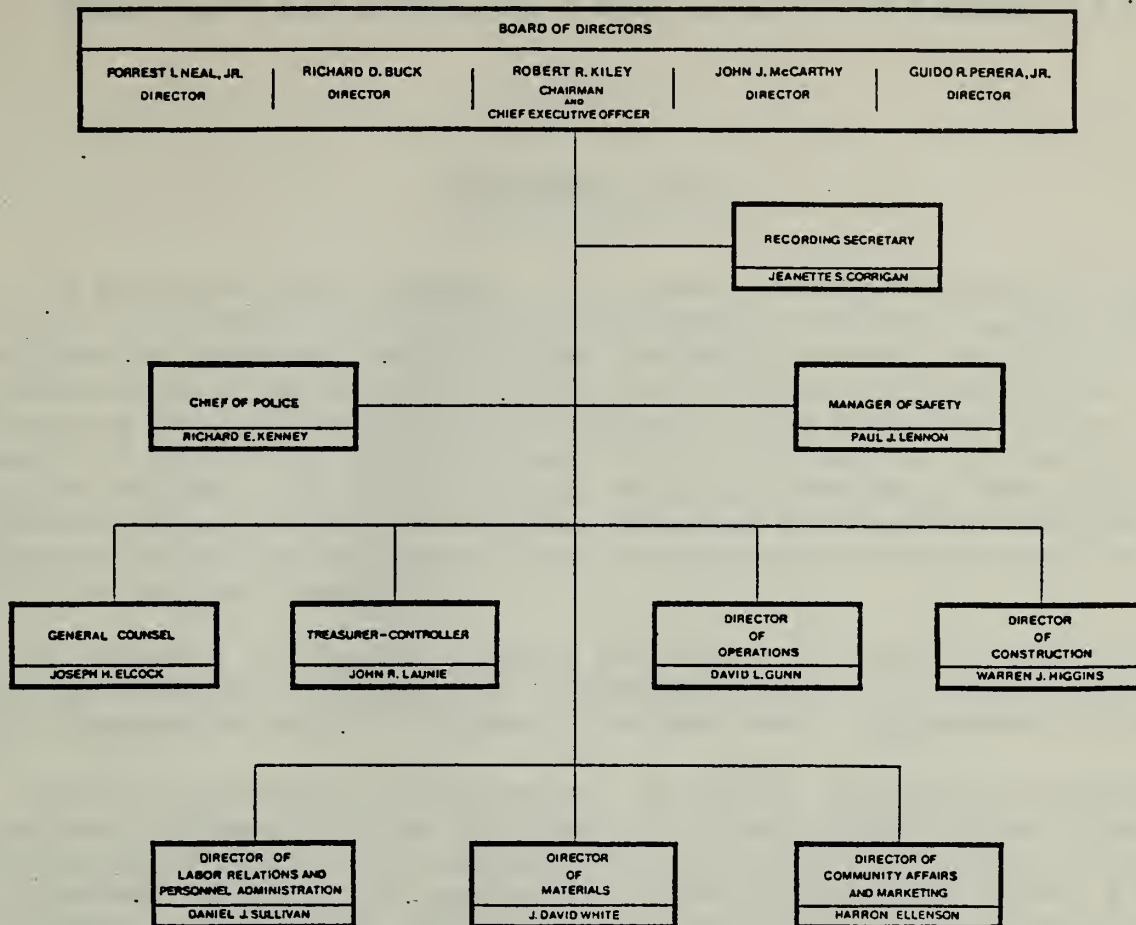
Very truly,
The Dean

Very truly,
The Dean

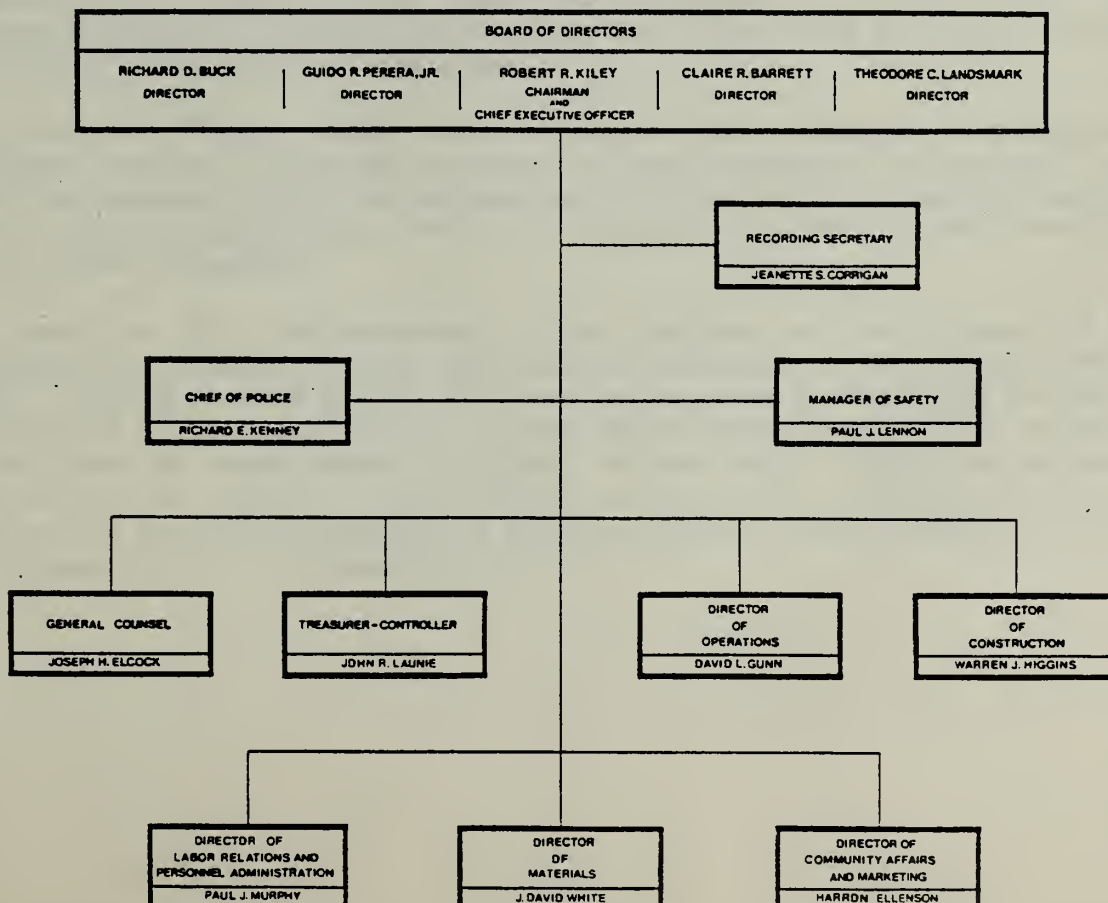
Very truly,
The Dean

ORGANIZATION CHARTS

1977



MARCH 31, 1978



THE UNIVERSITY OF CHICAGO

LIBRARY

1911

1911

THE UNIVERSITY OF CHICAGO

LIBRARY

THE UNIVERSITY OF CHICAGO

LIBRARY

1911

THE UNIVERSITY OF CHICAGO

LIBRARY

REPORTS FROM THE DEPARTMENTS

EXECUTIVE OFFICE

The Executive Office consists of the Office of the Chairman and Board of Directors; the Office of the Budget and Operations Analysis; and the Office of Administrative Services, which includes the Public Information Office. Early in 1978, the Equal Employment Opportunity/Affirmative Action Office was transferred from the Construction Directorate to the Executive Office. The Director of EEO/AA will report directly to the Chairman who also serves as Chief Executive Officer. The EEO/AA Director will also maintain a "dotted line" responsibility to the Director of Labor Relations and Personnel Administration on matters related to employment and to the Director of Construction on functions related to contract compliance.

During 1977, the Executive Office continued its efforts, begun in 1976, to strengthen planning, budgeting and reporting systems. As a result, for the second consecutive year, the Authority did not need a supplementary budget.

With all departments participating, the Office initiated the development of a five-year business plan for the Authority. These efforts proved valuable in involving several levels of management in systematic goal-setting, development of performance measures, and analysis of operating requirements over a multi-year period. In a related project, the Office led the development of a management information systems plan for which Federal funding from the Urban Mass Transportation Administration (UMTA) was requested. The Office also created a system of monthly financial reporting giving department heads the opportunity to monitor their budgets more closely.

Executive Office staff resources enabled the Authority to undertake special projects, such as a thorough analysis of work scheduling and control, done at the Cabot Maintenance Center in conjunction with Operations Planning, and establishment of an Asset Marketing Committee to explore the MBTA's non-transit assets for their income potential.

Again in 1977, the Assistant to the Chairman and the Director of Public Information continued to work with the Legislature, the Advisory Board, the news media, and the general public. It was in response to inquiries to the Public Information Office, for instance, that "Music Under Boston", the performances of musicians at three subway stations, was initiated. The idea has since been copied in other cities. Major efforts of the Public Information Office included keeping the news media advised on daily operations and construction activities and preparation of the Annual Report.

STRENGTH OF MATERIALS

CHAPTER I

The strength of materials is a branch of mechanics which deals with the behavior of materials under the action of forces. It is concerned with the determination of the internal stresses and strains which are produced in a material when it is subjected to an external load. The study of the strength of materials is essential for the design of structures and machines, and for the selection of materials for use in engineering.

The strength of materials is divided into two main branches: statics and dynamics. Statics deals with the behavior of materials under the action of forces which are constant in magnitude and direction. Dynamics deals with the behavior of materials under the action of forces which vary in magnitude and direction.

The strength of materials is also divided into two main branches: stress and strain. Stress is the internal force per unit area which is produced in a material when it is subjected to an external load. Strain is the change in length per unit length which is produced in a material when it is subjected to an external load. The study of the strength of materials is essential for the design of structures and machines, and for the selection of materials for use in engineering.

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OPERATIONS DIRECTORATE

To carry on its responsibility to provide transportation services for the 532,300 daily passengers, the Operations Directorate in 1977 opened a new Orange Line station at Oak Grove in Malden and initiated several programs to improve service reliability and equipment availability.

The Oak Grove Station, the sixth and last station on the Orange Line's Haymarket-North Extension, was opened for revenue service on Saturday, March 19. Two days later it was dedicated at ceremonies attended by neighboring residents and federal, state and local officials.

The MBTA's newest equipment, the Green Line's Light Rail Vehicles (LRVs), a highly sophisticated modern streetcar, completed first-year operations, gradually improving in reliability and availability so that by year's end 65 had been accepted. Early in 1977, however, the Authority recognized that the car was not a proven vehicle and required significant development before it could achieve efficient passenger operations. Consequently, LRV maintenance and development was consolidated under a new superintendent of LRV operations with full responsibility to oversee a two-to-three-year effort to develop a reliable and economic vehicle. Eighty percent UMTA funding for this effort has been requested in a \$7.2 million grant application.

Two UMTA-funded car reconstruction programs were inaugurated. One was to build 50 Presidents' Conference Committee (PCC) cars and the other to rebuild 88 Red Line Cambridge-Dorchester cars. The first rebuilt PCC was ready to return to service in January 1978 with 20 more expected during 1978. The first prototype rebuilt Red Line cars are scheduled to be completed in mid-1978.

A program of overhauling the traction motors of the Red Line South Shore cars with operating funds and installing air compressors purchased with UMTA funding was undertaken as these cars began showing signs of age. For 1978, a program to overhaul air brakes, control equipment, trucks and other critical components is planned.

In preparation for the arrival in mid-1978 of the first four of the 70 new Blue Line cars, a training program for carhouse repairmen was developed, following the pattern of the LRV training program for carhouse repairmen specialists.

A five-year program to upgrade standards in bus availability, reliability, cost effectiveness and vehicle appearance was developed along with a 2,000-mile safety inspection program. Maintenance procedures to be followed at all rapid transit carhouses and the Everett Shops were also developed.

In July, the Authority was forced to shut down power generation at its 76-year-old Lincoln Power Station because of the age of both the plant and the equipment. At that time, all operations were transferred to the South Boston Power Station which began generating power around the clock every day. Several UMTA-aided improvements programs were initiated to rehabilitate the 66-year-old South Boston power plant to prolong its life for five years until the power improvements program is completed.

THE HISTORY OF THE

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The Commuter Rail Department was reorganized to administer service contracts and the UMTA-funded Commuter Rail Improvement Programs. Early in the year, the service contracts were with the Boston & Maine Railroad operating out of North Station and Conrail for service out of South Station. On March 15, however, the Conrail service was taken over by the B & M, thereby bringing all commuter railroad service under one operator.

On May 1, a zone fare system was adopted on trains operating out of South Station, resulting in a uniform fare system for all commuter railroad services for the first time. An innovation during the year was the addition of a 25-cent rapid transit pass to the reverse side of the railroad commuter's monthly unlimited ticket.

Under two UMTA-funded Commuter Rail Improvements Programs, roadbed, track, station and parking lot improvements were begun on the Franklin Branch to the south, the South Acton Line to the west, and the Gloucester Branch to the northeast. Groundbreaking ceremonies were held at South Acton on August 8 and at Norwood Central Station on the Franklin Branch on August 25.

Using the guidelines and standards set in the Service Policy for Surface Lines, the Operations Planning Department throughout the year routinely allocated resources to services where improvements were warranted or adjusted service on substandard routes. A similar Service Policy for Rail Lines is now being developed for submission to the Advisory Board in late 1978.

In April, THE RIDE, a demand-responsive service to improve the mobility of the transportation handicapped, began operations as a test program in Brookline, Brighton, Allston, Kenmore, the Fenway, and part of the South End section of Boston. Also in April, a series of fare adjustments and improvements, developed by the Fare Review Task Force, were implemented, including increases in express bus fares, equalization of suburban and urban basic fares, and free transfers between downtown rapid transit stations and commuter rail stations for monthly ticket holders.

Contract bus service, being provided in Hingham and Hull by Hudson Bus Lines, became a part of the MBTA system in the Fall, following a six-months trial contract that started in April for service as a replacement for a private carrier that ceased operations in 1976. Scheduled to become a part of the MBTA system on January 1, 1978, was contract service by Michaud Bus Lines in Salem and Peabody, following an economic feasibility study of such service that had been requested by the two cities. The Hudson and Michaud contracts are the first private bus company contracts since the one in 1968 with Rapid Transit Inc. which serves Winthrop. Experimental private bus service continues in Bedford, Natick and Dedham.

Other Operations Directorate activities during the year included:

Modifying the overhead trolley wire for LRV operation on the Riverside Line, in the Central Subway to Northeastern University on the Huntington Avenue Line, on the Lechmere Viaduct, along Beacon Street and in the Reservoir Yard; removing the Canal Street Loop and building three stub end tracks for LRV operations to North Station, rebuilding about 5,900 feet of streetcar tracks in Centre Street, Jamaica Plain, as part of the Department of Public Works program to rebuild the street.

The first part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present and for the development of a sound policy for the future.

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Designing and supervising installation of radio systems for municipal fire departments and the Red and Green Lines, the MBTA Police Department, and commuter rail diesel cars.

Designing and implementing a cab signal package for the Red Line's South Shore cars, designing and assembling a similar package for the Red Line's Cambridge-Dorchester cars, and preparing specifications for the car signal package for the 120 new Orange Line cars.

Designing a new signal system for the Red Line's temporary Eliot Station, under construction for use while a new Harvard Square station is built as part of the Harvard-Alewife Extension.

Renewing about 4,000 feet of track on the Red Line's West Boston Bridge and preparing a federal grant application to UMTA for a \$63.2 million, multi-year track renewal program to be undertaken systemwide.

Installing 45 new bus shelters; painting 21 stations, and designing an additional 150-car parking lot that was opened on the west side of North Quincy Station on June 2.

Of interest were two non-service related activities during the year. One was the first Bus Roadeo which focused on driving skills and safety with the MBTA winner competing at a national competition sponsored by the American Public Transit Association. The other was researching, designing and ordering new uniforms for about 3,500 operating personnel, the first since 1963 and which include a new Winter outer coat and hat.

New equipment ordered during the year under various UMTA grants included five locomotives and 25 coaches; 90 turnpike and city buses; nine 4-wheel drive suburban type radio equipped vehicles, seven garage trucks, two small snowplows and other non-revenue vehicles.

THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY

REPORT OF THE
COMMISSIONER OF THE
BUREAU OF CHEMISTRY
FOR THE YEAR 1900

BY
J. H. MANNING
CHIEF OF BUREAU

CHICAGO
PUBLISHED BY THE
UNIVERSITY OF CHICAGO PRESS
1901

THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY

REPORT OF THE
COMMISSIONER OF THE
BUREAU OF CHEMISTRY
FOR THE YEAR 1900

BY
J. H. MANNING
CHIEF OF BUREAU

CONSTRUCTION DIRECTORATE

The MBTA was awarded federal grants totaling \$152,163,632 by the Urban Mass Transportation Administration (UMTA) in 1977. Capital and technical grants of about \$130 million assisted the Authority in continuing its program of expansion and modernization and nearly \$22 million in operating assistance for the MBTA system, including commuter railroads, helped defray the cost of service assessable on the 79 cities and towns in the transportation district.

Although federal aid for 1977 was less than the record amount received in 1976, the total compares favorably with all other years in the past decade.

Major capital grants included: \$42 million for the Red Line Northwest Extension from Harvard Square, Cambridge, to Alewife Brook Parkway at the Cambridge-Belmont-Arlington boundaries, allowing the MBTA to proceed with final engineering, first-phase land acquisitions, and construction; an additional \$22 million to continue construction of the South Shore Extension of the Red Line from Quincy to Braintree; nearly \$13 million (two grants) toward the purchase of new buses and the rehabilitation of 50 Presidents' Conference Committee (PCC) cars; and nearly \$33 million (three grants) for improvements to the power distribution system and the power generating plant at South Boston.

In addition, UMTA approved an additional \$10 million technical studies grant to continue work under the Unified Work Program. This grant allowed continuation of pre-grant engineering for the Red Line Northwest Extension and the Orange Line Relocation projects and to undertake studies to improve the 259-mile commuter railroad system as well as public transportation on the North Shore.

Indicative of the high level of activity of the Construction Directorate during the year was the award of 38 construction contracts with a value of more than \$101 million. In addition, orders were placed for some \$37 million worth of equipment, including 90 turnpike and city buses, 25 railroad coaches and five locomotives, and capital materials, such as turbine generators and steam boilers for the South Boston Power Station, miscellaneous tools and materials for the programs to modernize 88 Red Line cars and rehabilitate 50 PCCs, bullet-proof collector's booths, trolley wire, and track and signal materials.

The largest electrical contract ever awarded by the MBTA--and possibly in the nation--was for furnishing and installing AC and DC switchgear equipment, rectifier transformers, power rectifier and all auxiliary equipment for two switching stations and 15 rectifier substations. This \$17,787,113 contract represents the first major step in converting the MBTA's existing 25-cycle power system to a 60-cycle system that could, in the future, accommodate purchased power.

The largest single construction contract award in 1977 was for the completion of the South Cove Tunnel which will be the link between the existing Orange Line south of Essex Station and the relocated Orange Line in the Southwest Corridor railroad right-of-way. This contract, which amounts to \$20,600,660, is the first issued by the MBTA to include a specific goal for the employment of minority subcontractors.

GENERAL INSTRUCTIONS

1. The purpose of this manual is to provide a comprehensive guide to the use of the equipment described herein. It is intended for use by personnel who are responsible for the operation and maintenance of the equipment.

2. The instructions are divided into two main sections: (a) General Instructions, and (b) Detailed Instructions.

3. The General Instructions section contains information regarding the safety precautions, general operating procedures, and maintenance requirements. The Detailed Instructions section contains information regarding the specific operating procedures for each of the equipment components.

4. The instructions are written in a clear and concise manner, and are intended to be easily understood by personnel who are familiar with the equipment.

5. The instructions are written in a clear and concise manner, and are intended to be easily understood by personnel who are familiar with the equipment.

6. The instructions are written in a clear and concise manner, and are intended to be easily understood by personnel who are familiar with the equipment.

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A \$3.7 million contract was awarded for the reconstruction of the Midlands Division (Dorchester Branch) freight railroad line so that it can be used by MBTA commuter railroad trains and Amtrak's intercity trains during the relocation of the Orange Line to the mainline railroad right-of-way.

Several contracts totaling nearly \$36 million were awarded for the construction of the 3.2-mile Red Line Extension from Quincy to Braintree. A groundbreaking ceremony for the new Braintree Station and 1,200-car parking garage at the interchange of Route 3 and Union Street, South Braintree, was held on July 13. The remaining major contract for this project is for the Quincy Adams Station and 2,000-car parking garage near the intersection of Routes 3 and 128 in South Quincy. Construction of this complex is scheduled to begin in 1978.

Construction on another major rapid transit extension, the 2.7-mile Red Line Northwest from Harvard Square to Alewife Brook Parkway began in late 1977 with the start of construction of the Eliot Temporary Station under a \$1.4 million contract. Located at the former MBTA Bennett-Eliot Yards, near Harvard Square, this station and another temporary station at Holyoke Street will be used while a new Harvard Square Station is built. Other stations on the new extension will be at Porter Square in Cambridge, Davis Square in Somerville, and at Alewife where a 2,000-car parking garage will be built adjacent to the station.

Other construction contracts with a value of more than one million dollars were: a signal repair facility at the Cabot Maintenance Center, South Boston, \$1,071,800; a 200-bus garage and repair building at the MBTA's Charlestown property, \$9,846,729; a receiving cashier's facility at Charlestown, \$1,560,742; and structural repairs to the Orange Line elevated structure from the subway portal to Forest Hills, \$1,793,570.

While no construction contracts were awarded in 1977 under the Station Modernization Program, one station, Auditorium on the Green Line, was completed on August 31 and work progressed on modernizing Park, Washington and State Street Stations under previously awarded contracts.

The sixth and last station on the Orange Line's \$176 million northern extension was opened for revenue service on March 19 at Oak Grove, Malden, near the Melrose boundary. A dedication ceremony was held on March 21.

Two UMTA-funded Commuter Rail Improvements programs got underway during the Summer. Estimated to cost more than \$70 million, both programs are designed to improve roadbed and track, stations and parking lots on the Franklin Line, south of Boston, and the several lines serving the communities to the north and west of Boston, and to rehabilitate and acquire new equipment. Groundbreaking ceremonies were held at the South Acton Station on August 8 and at Norwood Central Station on the Franklin Branch on August 25.

THE FIRST PART OF THE HISTORY OF THE
LIFE OF THE LATE KING OF GREAT BRITAIN
AND IRELAND CHARLES THE SECOND

BY JOHN BURNET
OF THE SOCIETY OF THE APOSTOLICAL CHURCH
IN GREAT BRITAIN

IN TWO VOLUMES.
THE FIRST VOLUME.
LONDON, Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, in the Parish of St. Dunstons, in the County of Middlesex, 1704.

THE SECOND VOLUME.
LONDON, Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, in the Parish of St. Dunstons, in the County of Middlesex, 1704.

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THE FIFTH VOLUME.
LONDON, Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, in the Parish of St. Dunstons, in the County of Middlesex, 1704.

FEDERAL GRANTS in CALENDAR 1977

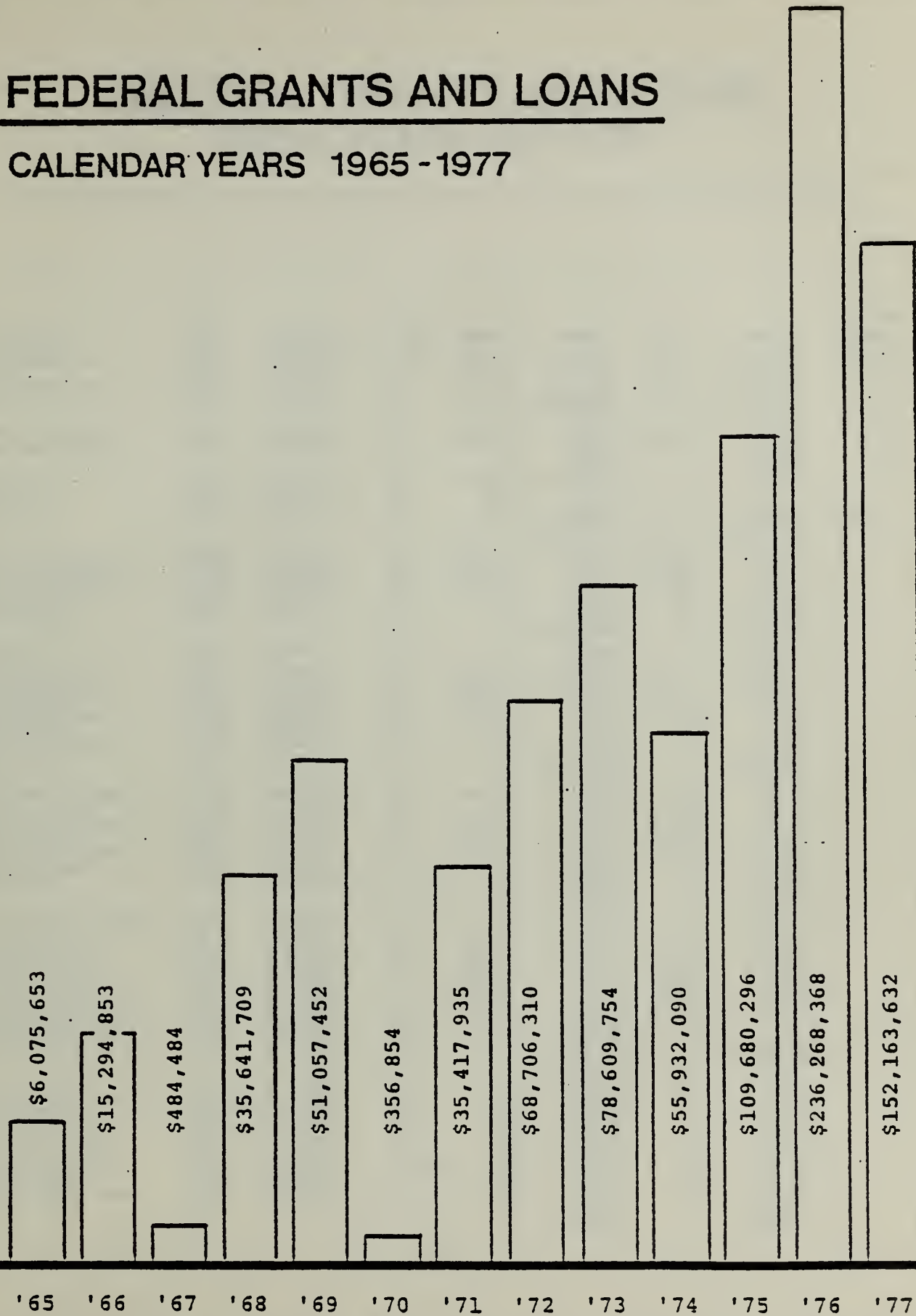
Project Description	Date Approved	Type	Federal Share		Local Share		Total
			\$	(%)	\$	(%)	
Operating Asst. - Rail	5-6-77	(OA)	\$ 4,838,331	(98%)	\$ 339,807	(2%)	\$ 5,178,138
Purc. 100 New Buses, Amend.	5-27-77	(C)	6,344,000	(80%)	1,586,000	(20%)	7,930,000
Validation Study Amend. 3	6-29-77	(D)	137,902	(87%)	20,685	(13%)	158,587
Unified Work Program Amend.	8-30-77	(T) (IT)	10,000,000	(80%)	2,500,000	(20%)	12,500,000
Rehab. Comm. Rail Track & Fac.	9-30-77	(C)	2,500,000	(100%)	-----	-----	2,500,000
Power Improvements, Amend.	10-6-77	(C)	23,480,000	(80%)	5,870,000	(20%)	29,350,000
So. Shore R.T.-Braintree, Amend.	10-6-77	(C) (IT)	22,296,080	(80%)	5,574,020	(20%)	27,870,100
Immediate Needs Power, Amend.	10-6-77	(C)	2,916,000	(80%)	729,000	(20%)	3,645,000
Rehab. 50 PCC Cars	10-6-77	(C)	6,412,384	(80%)	1,603,096	(20%)	8,015,480
Transit Efficiency Program	10-6-77	(C)	7,956,000	(80%)	1,989,000	(20%)	9,945,000
Power Cable Program	10-6-77	(C)	6,400,000	(80%)	1,600,000	(20%)	8,000,000
Red Line Northwest R.T. Ext.	11-11-77	(C) (IT)	42,009,180	(80%)	10,502,295	(20%)	52,511,475
Operating Assistance	10-14-77	(OA)	16,861,566	(11%)	143,613,012	(89%)	160,474,578
Training Grants	10-19-77	(M)	12,189	(75%)	4,063	(25%)	16,252
TOTALS			\$152,163,632		\$175,930,978		\$328,094,610

Type Code

(C) Capital
 (D) Demonstration
 (M) Managerial
 (T) Technical
 (IT) Interstate Transfer
 (OA) Operating Assistance

FEDERAL GRANTS AND LOANS

CALENDAR YEARS 1965 - 1977



TOTAL : \$845,689,390

Journal of the American Medical Association

Published Weekly, except on Sundays, Holidays, and Days when the Session of Congress is in Progress



Published by the American Medical Association, 535 North Dearborn Street, Chicago, Ill.

Subscription price, \$5.00 per annum in advance.

FEDERAL GRANTS and LOANS

FISCAL YEARS 1965-1978

UMTA FISCAL YEAR	PROJECT DESCRIPTION	DATE APPR.	FEDERAL PROJ.#	TYPE CODE	FEDERAL	SHARE	LOCAL	SHARE	INVESTMENT INCOME	TOTAL
1965	19 Station Modernization	2-15-65	MA-03-0001**	(C)	66-2/3%	56,075,653.	33-1/3%	53,037,826.	52,441.	59,115,920.
1966	30 Bus Acquisition (150)	5-23-66	MA-03-0002**	(C)	66-2/3%	3,136,654.	33-1/3%	1,568,327.	-	4,704,981.
	11 Haymarket Tunnel	6-14-66	MA-03-0003**	(C)	66-2/3%	11,997,599.	33-1/3%	5,998,800.	3,601.	18,000,000.
						15,134,253.		7,567,127.	3,601.	22,704,981.
1967	11 Haymarket Soils Instru.	10-12-66	MA-06-0008**	(D)	66-2/3%	160,600.	33-1/3%	80,300.	74.	240,974.
	12 Southwest Corridor Stu.	6-21-67	MA-09-0001	(T)	66-2/3%	484,484.	33-1/3%	242,242.	-	726,726.
						645,084.		322,542.	74.	967,700.
1968	14 South Shore R/T	3-12-68	MA-03-0004	(C)	66-2/3%	34,469,333.	33-1/3%	17,234,667.	117,000.	51,821,000.
	14 South Shore R/T	3-12-68	MA-03-0004	(R)	100%	617,000.	-	-	-	617,000.
	Training Grant	1968	MTTR-2**	(M)	75%	19,976.	25%	6,658.	-	26,634.
						35,106,309.		17,241,325.	117,000.	52,464,634.
1969	11 Haymarket North	6-24-69	MA-03-0005	(C)	66-2/3%	50,862,000.	33-1/3%	25,431,000.		76,293,000.
	12 Southwest Corridor Amend.	12-16-68	MA-09-0001	(T)	66-2/3%	13,333.	33-1/3%	6,667.		20,000.
	17 Central Area Systems Stu.	9- 7-68	MA-09-0002**	(T)	66-2/3%	522,067.	33-1/3%	261,034.		783,101.
	11 HN Soils Instru. Amend.	6-27-69	MA-06-0008**	(D)	66-2/3%	144,971.	33-1/3%	72,486.		217,457.
	Service Development	6- 4-69	MASS-MTD-7**	(D)	81%	35,178.	19%	8,252.		43,430.
	Training Grant	1969	MTTR-3**	(M)	75%	15,303.	25%	5,102.		20,405.
						51,592,852.		25,784,541.		77,377,393.
1970	Training Grant	6-15-70	MTTR-4**	(M)	75%	10,238.	25%	3,412.		13,650.
1971	14 South Shore R/T Amend.	5-18-71	MA-03-0004	(C)	66-2/3%	3,657,263.	33-1/3%	1,828,632.		5,485,895.
	16 Cabot Maint. Center	5-18-71	MA-03-0007	(C)	66-2/3%	18,800,000.	33-1/3%	9,400,000.		28,200,000.
	21 System Wide Mod.	5-18-71	MA-03-0010	(C)	66-2/3%	3,000,000.	33-1/3%	1,500,000.		4,500,000.
	37 Bus Acquisition (310)	5-18-71	MA-03-0011	(C)	66-2/3%	8,100,250.	33-1/3%	4,050,125.		12,150,375.
	Validation Study	8-27-70	MASS-MTD-8	(D)	87%	346,616.	13%	51,422.		398,038.
	Validation Stu. Amend.	5- 9-71	MASS-MTD-8	(D)	83%	35,100.	17%	7,296.		42,396.
	Training Grants	Various	MTTR-5-9**	(M)	75%	22,738.	25%	7,579.		30,317.
						33,961,967.		16,845,054.		50,807,021.
1972	38/52 Bos. Trans. Plan. Rev.	7- 9-71	MA-09-0010	(T)	66-2/3%	1,693,500.	33-1/3%	846,750.		2,540,250.
	41 Light Rail Veh. Spec.	12- 8-71	MA-06-0015**	(D)	84%	109,084.	16%	20,841.		129,925.
	16 Cabot Maint. Cent. Amend.	1-12-72	MA-03-0007	(C)	66-2/3%	320,000.	33-1/3%	160,000.		480,000.
	54 Sta. Mod. Phase II	5-19-72	MA-03-0013	(C)	66-2/3%	9,565,086.	33-1/3%	4,782,544.		14,347,630.
	53 Green Line Improvements	2-25-72	MA-03-0015	(C)	66-2/3%	25,413,333.	33-1/3%	12,706,667.		38,120,000.
	51 Non-Revenue Equipment	1-12-72	MA-03-0021	(C)	66-2/3%	568,940.	33-1/3%	284,470.		853,410.
	Training Grants	Various	MA-10-0010-13**	(M)	75%	20,624.	25%	6,875.		27,499.
						37,690,567.		18,808,147.		56,498,714.
1973	41 Light Rail Veh. Spec. Amend.	8-25-72	MA-06-0015**	(D)	72%	18,327.	28%	7,126.		25,453.
	55 Green Line Vehicles	10-20-72	MA-03-0022	(C)	66-2/3%	32,800,000.	33-1/3%	16,400,000.		49,200,000.
	56 Plant Impro. Phase I	1- 2-73	MA-03-0017	(C)	66-2/3%	1,573,146.	33-1/3%	786,574.		2,359,720.
	58 Rapid Transit Cars (80)	6-18-73	MA-03-0024	(C)	66-2/3%	18,410,600.	33-1/3%	9,205,300.		27,615,900.
	57 Safety Improvements	6-18-73	MA-03-0025	(C)	66-2/3%	10,601,640.	33-1/3%	5,300,820.		15,902,460.
	59 Plant Impro. Phase II	6-18-73	MA-03-0026	(C)	66-2/3%	7,933,092.	33-1/3%	3,966,548.		11,899,640.
	60 Track. Trolleys (50) Phase II	6-18-73	MA-03-0028	(C)	66-2/3%	1,781,500.	33-1/3%	890,750.		2,672,250.
	11/62 Haymarket North Amend.	6-27-73	MA-03-0005	(C)	66-2/3%	13,126,410.	33-1/3%	6,563,206.		19,689,616.
	Penn Central Acquisition	1-26-73	MA-03-9001	(L)	100%	19,500,000.	-	-		19,500,000.
	Training Grants	Various	MA-10-0016-20**	(M)	75%	26,494.	25%	8,832.		35,326.
						105,771,209.		43,129,156.		148,900,365.
1974	61 Rest. Orange Line Str.	10-26-73	MA-03-0029	(C)	80%	4,456,872.	20%	1,114,218.		5,571,090.
	63 Transit Develop. Program	8-22-73	MA-09-0016	(T)	80%	1,200,000.	20%	300,000.		1,500,000.
	16 Cabot Supplemental	6-10-74	MA-03-0007	(C)	80%	5,424,476.	20%	1,356,119.		6,780,595.
	55 Green Line Veh. Amend.	6-10-74	MA-03-0022	(C)	80%	7,628,488.	20%	1,907,122.		9,535,610.
	60 Track. Trolley Amend.	6-28-74	MA-03-0028	(C)	80%	1,133,360.	20%	283,340.		1,416,700.
	11 Haymarket North Amend.	6-27-74	MA-03-0005	(C)	80%	1,000,000.	20%	250,000.		1,250,000.
	65 Unified Work Program	7-11-74	MA-29-9001	(T) (IT)	80%	10,000,000.	20%	2,500,000.		12,500,000.
	66 Power Improvements	7-11-74	MA-03-0019	(C)	80%	2,115,836.	20%	528,959.		2,644,795.
	67 Purchase of 125 New Buses	7-15-74	MA-03-0018	(C)	80%	5,496,500.	20%	1,374,125.		6,870,625.
	Training Grants	Various	MA-10-0021-22	(M)	75%	13,006.	25%	4,349.		17,355.
						38,468,538.		9,618,232.		48,086,770.

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YEAR	PROJECT DESCRIPTION	DATE APPR.	FEDERAL PROJ.#	TYPE CODE	FEDERAL	SHARE	LOCAL	SHARE	INVESTMENT INCOME	TOTAL
1975	68 So. Shore R/T - Braintree	11- 1-74	MA-23-9001	(C) (IT)	80%	\$23,040,424.	20%	\$5,760,106.		\$28,800,530.
	01 Prepaid Transit Pass Program	10-25-74	MA-06-0059	(D)	100%	80,000.	-	-		80,000.
	70 Charlestown Bus Garage	2-12-75	MA-03-0016	(C)	80%	8,314,400.	20%	2,078,600.		10,393,000.
	71 Plant Impro. Phase III	2-12-75	MA-03-0031	(C)	80%	13,942,800.	20%	3,485,700.		17,428,500.
	72 Main. Productivity Study	5-22-75	MA-09-0026	(T)	80%	136,000.	20%	34,000.		170,000.
	73 Purchase & Mod. R/T Cars	7- 7-75	MA-23-9002	(C) (IT)	80%	42,688,360.	20%	10,672,090.		53,360,450.
	74 Immediate Needs Power	6-23-75	MA-03-0037	(C)	80%	10,394,400.	20%	2,598,600.		12,993,000.
	56 Plant Improv. Ph. I Amend.	7- 7-75	MA-03-0017	(C)	80%	5,723,068.	20%	1,430,767.		7,153,835.
	75 Service Bus Lines	7- 7-75	MA-03-0042	(C)	80%	204,480.	20%	51,120.		255,600.
	76 Rest. Track Support Stru.	7- 7-75	MA-03-0036	(C)	80%	2,526,256.	20%	631,564.		3,157,820.
	77 Commuter Rail Phase I	7- 7-75	MA-03-0040	(C)	80%	10,907,200.	20%	2,726,800.		13,634,000.
	78 Purchase 143 New Buses	7- 7-75	MA-03-0033	(C)	80%	7,987,396.	20%	1,996,849.		9,984,245.
	02 Validation Study Amendment	4-30-75	MA-06-0011	(D)	100%	68,000.	-	-		68,000.
	03 B & M Track Rehabilitation	7-31-75	013200117	(C)	62%	506,212.	38%	317,000.		823,212.
	79 MAPC Tech. Study	8-22-74	MA-09-0018	(T) ***	-	-	100%	148,750.		148,750.
	Training Grants	Various	MA-10-0025-27	(M)	75%	18,602.	25%	6,203.		24,805.
						<u>126,537,598.</u>		<u>31,938,149.</u>		<u>158,475,747.</u>
1976	Operating Asst.	11-18-75	MA-05-4003	(OA)	49%	6,241,114.	51%	6,531,258.		12,772,372.
	Training Grants	Various	MA-10-0028-32	(M)	75%	22,008.	25%	7,339.		29,347.
	53 Green Line Amend.	3-22-76	MA-03-0015	(C)	80%	9,256,368.	20%	2,314,092.		11,570,460.
	83 Midlands	4- 9-76	MA-23-9004	(C) (IT)	80%	12,800,000.	20%	3,200,000.		16,000,000.
	84 South Cove	4- 9-76	MA-23-9005	(C) (IT)	80%	26,950,400.	20%	6,737,600.		33,688,000.
	Operating Asst.	6-10-76	MA-05-4006	(OA)	9%	11,172,532.	91%	120,142,567.		131,315,099.
	86 So. Quincy R/T Sta.	7-21-76	MA-03-0049	(C)	80%	21,015,044.	20%	5,253,761.		26,268,805.
	66 Power Improvements	7-21-76	MA-03-0019	(C)	80%	12,518,560.	20%	3,129,640.		15,648,200.
	73 Purch. 190 R/T Cars	7-21-76	MA-23-9002	(C) (IT)	80%	18,418,920.	20%	4,604,730.		23,023,650.
	14 South Shore	7-21-76	MA-03-0004	(C)	80%	60,320.	20%	15,080.		75,400.
	11 Haymarket North	7-21-76	MA-03-0005	(C)	80%	2,918,244.	20%	729,561.		3,647,805.
	16 Cabot Maint. Ctr.	7-21-76	MA-03-0007	(C)	80%	551,712.	20%	137,928.		689,640.
	21 System-Wide Mod.	7-21-76	MA-03-0010-1	(C)	80%	162,204.	20%	40,551.		202,755.
	54 Sta. Mod. Phase II	7-21-76	MA-03-0013	(C)	80%	216,004.	20%	54,001.		270,005.
	53 Green Line Improvements	7-21-76	MA-03-0015-02	(C)	80%	713,744.	20%	178,436.		892,180.
	67 Purch. 125 Buses	7-21-76	MA-03-0018-01	(C)	80%	48,968.	20%	12,242.		61,210.
	66 Power Improvements	7-21-76	MA-03-0019-02	(C)	80%	42,320.	20%	10,580.		52,900.
	55 Green Line Vehicle	7-21-76	MA-03-0022-02	(C)	80%	884,740.	20%	221,185.		1,105,925.
	57 Safety Impr.	7-21-76	MA-03-0025-01	(C)	80%	220,176.	20%	55,044.		275,220.
	59 Plant Improv. Phase II	7-21-76	MA-03-0026-01	(C)	80%	370,728.	20%	92,682.		463,410.
	60 Track. Trolley 50	7-21-76	MA-03-0028-02	(C)	80%	57,908.	20%	14,477.		72,385.
	61 Rest. Orange Line	7-21-76	MA-03-0029-01	(C)	80%	204,520.	20%	51,130.		255,650.
	70 Charlestown Bus Garage	10- 6-76	MA-03-0016	(C)	80%	13,202,100.	20%	3,300,525.		16,502,625.
	65 Unified Work Program	10- 6-76	MA-29-9001-1	(T) (IT)	80%	3,000,000.	20%	750,000.		3,750,000.
	87 B & M Loan	10- 6-76	MA-23-9010	(L)	100%	24,172,750.	-	-		24,172,750.
	88 CRIP Phase II	10- 6-76	MA-23-9006	(C) (IT)	80%	46,308,960.	20%	11,577,240.		57,886,200.
	64 Mod. 88 Red Line Cars	10- 6-76	MA-23-9009	(C) (IT)	80%	14,099,368.	20%	3,524,842.		17,624,210.
						<u>225,629,712.</u>		<u>172,686,491.</u>		<u>398,316,203.</u>
1977	Training Grants	Various	MA-10-0033-36	(M)	75%	33,213.	25%	11,074.		44,287.
	Operating Asst.	12- 7-76	MA-05-4014	(OA)	12%	16,868,565.	88%	127,881,575.		144,750,140.
	Operating Asst.-Rail	5- 6-77	MA-17-0001	(OA)	98%	4,838,321.	2%	339,807.		5,178,128.
	78 Purch. 100 New Buses, Amend.	5-27-77	MA-03-0033	(C)	80%	6,344,000.	20%	1,586,000.		7,930,000.
	2 Validation Study Amend. 3	6-29-77	MA-06-0011	(D)	87%	137,902.	13%	20,685.		158,587.
	65 Unified Work Program Amend.	8-30-77	MA-29-9001	(T) (IT)	80%	10,000,000.	20%	2,500,000.		12,500,000.
	4 Rehab. Comm. Rail Track & Fac.	9-30-77	01-51-20591	(C)	100%	2,500,000.	-	-		2,500,000.
	66 Power Improvements, Amend.	10- 6-77	MA-03-0019	(C)	80%	23,480,000.	20%	5,870,000.		29,350,000.
	68 So. Shore R/T-Braintree, Amend.	10- 6-77	MA-23-9001	(C) (IT)	80%	22,296,080.	20%	5,574,020.		27,870,100.
	74 Immediate Needs Power, Amend.	10- 6-77	MA-03-0037	(C)	80%	2,916,000.	20%	729,000.		3,645,000.
	89 Rehab. 50 PCC Cars	10- 6-77	MA-03-0053	(C)	80%	6,412,384.	20%	1,603,096.		8,015,480.
	92 Transit Efficiency Program	10- 6-77	MA-03-0051	(C)	80%	7,956,000.	20%	1,989,000.		9,945,000.
	93 Power Cable Program	10- 6-77	MA-03-0054	(C)	80%	6,400,000.	20%	1,600,000.		8,000,000.
	91 Red Line Northwest R/T Ext.	11-11-77	MA-23-9008	(C) (IT)	80%	42,009,180.	20%	10,502,295.		52,511,475.
						<u>152,191,655.</u>		<u>160,206,552.</u>		<u>312,398,207.</u>
1978	Operating Asst.	10-14-77	MA-05-4021	(OA)	11%	16,861,566.	89%	143,613,012.		160,474,578.
	Training Grants	10-19-77	MA-10-0037	(M)	75%	12,189.	25%	4,063.		16,252.
						<u>16,873,755.</u>		<u>143,617,075.</u>		<u>160,490,830.</u>
						<u>5845,689,390.</u>		<u>5650,805,629.</u>	<u>\$123,116.</u>	<u>\$1,496,618,135.</u>
	TYPE CODE			GRAND TOTAL						
	(C) Capital	(R) Relocation								
	(D) Demonstration	(T) Technical								
	(L) Loan	(IT) Interstate Transfer	**Completed Grants							
	(M) Managerial	(OA) Operating Assistance	***MFTA participating in MAPC Tech. Study Grant up to \$148,750.							



COMMUNITY AFFAIRS AND MARKETING DEPARTMENT

The Community Affairs and Marketing Department, which is the link between MBTA services and residents of eastern Massachusetts, began a systematic review and analysis of the quality of MBTA passenger information; took steps to bring all applicant companies into the Pre-Paid Pass Program; and initiated an effort to update the Service Planning data base.

The Department consists of five sections--Consumer Relations, Community Affairs, Pass Program, Service Planning, and Advertising and Promotions. Summaries of the year's activities of these sections follow:

Consumer Relations

The Community Affairs and Marketing Department established as its top priority the development of a comprehensive traveller information system, directed by a manager of consumer relations with responsibility for customer service, senior citizen registration and special projects.

First to receive special attention was the Customer Service unit where hours of operation were expanded and new telephone equipment was installed. The new customer service telephone number is 722-3200.

During the year, 17,209 Senior Citizen half-fare and 3,844 Special Needs half-fare, off-peak passes were issued.

The Special Projects section worked on three major programs: a federally-funded electronic pass reader that will increase security and convenience in the Pre-Paid Pass Program; production and distribution of a braille map of the (T)'s rapid transit system in cooperation with the Massachusetts Commission for the Blind; and development of 10 bus route braille maps that are expected to be produced and distributed in 1978.

Community Affairs

Serving as the liaison between the technical planning and operation of service, the users of those services, and community and public officials, the Community Affairs section was able to increase the responsiveness of the (T) to the public and conversely increase the public's understanding of the (T)'s marketing, customer service and service planning activities.

Pass Program

The MBTA Pass Program experienced substantial growth from 15,210 passholders with 241 employers, at the end of 1976 to 23,531 passholders with 518 companies and agencies at the end of 1977. This is an increase of 54 percent in passholders and 114 percent in employers. These passes represent \$368,000 in monthly income or approximately 8.2 percent of total Authority revenues. Fifteen Pass Program companies subsidize the monthly pass for their employees. The subsidy--which ranges from 50 to 100%--is a new concept in employee benefits.

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Two features offering greater savings and convenience to passholders were introduced. These were: (1) The Institute of Contemporary Art and the New England Aquarium both agreed to offer discounts to MBTA passholders and MBTA employees; and (2) monthly commuter railroad ticket purchasers were provided a 25¢ rapid transit pass on the back of their tickets. This program is the first real link between MBTA rapid transit and commuter rail.

The Pass Program was assigned responsibility for Spred-Sked, the MBTA's effort to persuade major downtown employers to begin flexible or staggered work hours to help ease rush hour overcrowding at six major subway stations.

Service Planning

The Service Planning section focused its efforts on identifying specific bus routes requiring improvement and on developing more comprehensive planning for the collection of passenger data on which service improvements are based.

By assisting in the capital planning processes in the Northwest Corridor, the North Shore Corridor, and the Southwest Corridor, the section was able to identify public transportation needs which may be addressed immediately, rather than in the context of long-range transit extensions. Bus route planning assistance for Boston's proposed auto-restricted zone was also provided.

The Service Planning section continued to administer three suburban para-transit experiments, begun in 1976 in Bedford, Natick, and Needham. Services in all three towns appear to be successful, indicating that a market exists for such local, intra-town service.

Advertising and Promotions

Following a study to determine the informational needs of various segments of the MBTA passenger market, new or improved informational materials were developed. These included: individual schedule cards showing maps, trip times, intermediate stops, and fare and pass information; regional brochures with a schematic route map, frequency chart, route finder and local pedestrian map; a tourist brochure in conjunction with ARTS/Boston; a rapid transit map in Chinese, the first in a series of materials for non-English-speaking passengers; and "Car-Free in Boston", a guide to public transportation in eastern Massachusetts in conjunction with the Association for Public Transportation.

Promotional campaigns, noteworthy for their public impact, included: Music Under Boston, live music at three subway stations which was a national first for Boston and since duplicated in several other cities; a cooperative program with the Massachusetts Department of Public Works, urging a switch to public transportation and carpools to ease traffic congestion expected when reconstruction begins on the Southeast Expressway; a public education campaign with the Shriners' Burns Institute, warning of the dangers of fire to children; and a promotional program, available to service organizations and clubs in the area, presenting the past, present and future of the MBTA in 35 mm. slides with a tape recorded narrative.

The first thing I noticed when I stepped out of the car was the cold. It was a sharp contrast to the warm blanket I had been sitting under. I looked up at the sky, which was a pale, hazy blue. The air smelled like a mix of fresh earth and distant fires. I took a deep breath, feeling the cold air fill my lungs. It was a strange sensation, but I knew it was necessary. I had to be ready for whatever came next.

I walked towards the building, my boots crunching on the snow. The path was well-trodden, but I still felt a sense of isolation. The building was large and imposing, with many windows that looked like eyes. I hesitated for a moment before entering. The interior was warm and smelled like old books and coffee. I found a man sitting at a desk, looking tired. He looked up at me and smiled slightly. "Welcome," he said. "What can I do for you?"

I told him my name and what I was looking for. He nodded and led me to a room. The room was simple, with a bed, a desk, and a chair. I sat down and looked out the window. The view was of a snowy landscape with a few trees. I felt a sense of peace for the first time in a long while. I closed my eyes and listened to the sound of the snow falling. It was a beautiful sound, and I knew I was in the right place.

I stayed in the room for a few days, waiting for someone to come. The man at the desk came to see me every day, but he didn't say anything. I was starting to get impatient. I went back to the desk one day and asked him what was going on. He looked at me and said, "You're safe here. No one is going to find you. Just wait." I didn't know what to think. I was used to being in control, but now I was at the mercy of someone I didn't even know. I decided to wait. I would wait until I knew what was going on.

After a week, I was still waiting. I was starting to feel like I was being trapped. I went back to the desk and asked the man again. He looked at me and said, "I'm sorry, but I can't tell you anything. You have to wait. It's the only way." I was frustrated, but I knew I had no choice. I decided to wait some more. I would wait until I knew what was going on. I would wait until I was free.

I stayed in the room for another week. I was starting to feel like I was being forgotten. I went back to the desk and asked the man again. He looked at me and said, "I'm sorry, but I can't tell you anything. You have to wait. It's the only way." I was frustrated, but I knew I had no choice. I decided to wait some more. I would wait until I knew what was going on. I would wait until I was free. I was starting to feel like I was being forgotten. I went back to the desk and asked the man again. He looked at me and said, "I'm sorry, but I can't tell you anything. You have to wait. It's the only way." I was frustrated, but I knew I had no choice. I decided to wait some more. I would wait until I knew what was going on. I would wait until I was free.

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POLICE DEPARTMENT

Significant gains were made during 1977 in the performance of the Police Department in the areas of crime reduction, investigative effectiveness, administrative improvements, and acquisition of equipment.

After a 25 percent decrease in various crimes in 1976, there was a further 21 percent decrease in the same crimes in 1977, as shown in the following chart of comparative statistics:

<u>Crime</u>	<u>1975</u>	<u>1976</u>	<u>Net Change</u>	<u>1977</u>	<u>Net Change</u>
Assault and Battery	299	284	- 5%	255	-10%
Breaking and Entering	179	120	-33%	86	-28%
Vandalism	384	328	-14%	296	- 9%
Armed and Unarmed Robbery	319	298	- 6%	221	-25%
Larceny and Missing Property	2,453	1,372	-44%	1,106	-19%
Missiling	336	544	+62%	364	-33%
TOTALS	3,970	2,946	-25%	2,328	-21%

The reduction in crime is the result of improved deployment of manpower, based on crime trend analysis; increased use of "plainclothes" men usually working in teams, and more intensive and prompt follow-up investigations which have contributed to the arrest of offenders. All this added to the Department's efforts to change the public's perception of crime on the system and to convey the message that with approximately 500,000 people using the (T) daily an infinitesimal number is personally involved in crime.

During 1977, major arrests were made for employee theft. As a result, supervisors and department heads are more conscious of security problems and are removing or lessening the opportunity for theft by employees.

By the end of the year, (T) police had completed the first phase of a communication modernization program and the Department is now part of the Boston Area Police Emergency Radio Net, a regional system that provides two-way communication between all law enforcement agencies in the Greater Boston area.

Administrative improvements included promotion of qualified personnel to Detective rank and other ranks with command responsibility. Accountability was also improved through definition of responsibility and application of disciplinary procedures.

The addition of three new patrol vehicles not only improved department morale, but are helping in the Department's efforts to provide the best possible service to the transit riding public. Also improving morale were changes in the uniform, including a new hat style and uniform shirt.

In 1978 the Chief of Police will serve as Chairman of the Security Committee of the American Public Transit Association.

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OFFICE OF SAFETY

The Office of Safety sponsored the MBTA's First Annual Bus Rodeo in the Summer at the Cabot Center Garage with 62 bus operators, whose accident and attendance records had been checked for eligibility, competing under rules of the American Public Transit Association (APTA). Twelve operators with the highest point scores after completing an obstacle course were selected as finalists to compete again to choose the champion.

The winner, Operator 'Gus' Swanson of the Cabot Garage was presented an award and sent to Atlanta, Ga., in October to represent the (T) in the National Bus Rodeo, sponsored by APTA at its annual meeting.

'Safe Driver' pins were presented to 252 Surface Lines operators who have driven a minimum of one year without being involved in an accident, and 113 operators received a U. S. Savings Bond for achieving a record of more than two years without an accident.

Nearly 800 weekly-paid employees who were not absent during 1976 were presented commendation certificates by their supervisors. Central Control and Steel Structure Maintenance areas led all others with nearly 50% of the employees receiving the awards.

Traffic accidents on surface lines (bus and streetcar) increased 10 percent over 1976 chiefly because of severe weather and poor road conditions during the first quarter of 1977. The number of passenger accidents, however, decreased 3.6 percent.

1977 was the second successive year that the number of days lost from industrial accidents has gone down. The decrease was 9.5 percent. The number of chargeable accidents--those in which an injury is so severe that an employee cannot work his/her next scheduled shift--also decreased 6.3 percent. Reported industrial accidents, however, increased by 14.3 percent. This increase is attributed to a larger number of minor first aid type injuries being reported for the first time in 1977.

PERSONNEL DIRECTORATE

The Personnel Directorate provides staff support and services to all (T) departments on matters of employee compensation, performance, recruitment and promotion, absences and affirmative action. The directorate's services include staff assistance, guidance and counseling on personnel and labor relations matters; negotiation and administration of labor contracts; screening, recruiting, examination and selection of candidates for employment, including physical examinations for present and prospective employees; design of employee training and development programs; counseling for alcoholism, drug abuse and other behavioral problems; maintenance of personnel records; and the development and implementation of an aggressive affirmative action program.

The Directorate is structured into four sections, each of which is headed by a manager who reports to the Director of Labor Relations & Personnel Administration. The four sections are: Labor Relations; Employment, Workmen's Compensation and Medical Services; Personnel; and Equal Employment Opportunity. The following is a summary of the work of the various sections during the year:

Labor Relations

The early part of 1977 was spent on settlement of the remaining labor contracts with the unions that had not come to terms based on the pattern established by the 1976 Myers Arbitration Award. By March, the pattern had been accepted by all unions except one. Arbitration on the issue followed and in March, the arbitrator issued his award, based on the already-established pattern.

Following arbitration proceedings in the Spring relative to the Pension Agreement which covers all employees, an Award was issued providing minimum benefit increases that required no additional contribution to the Fund at that time. Throughout the year, 19 grievance arbitration proceedings were held.

At year's end, time was spent gearing up for collective bargaining negotiations, because the majority of labor agreements expired December 31, 1977.

Employment, Workmen's Compensation and Medical Services

In June, a public lottery was held to establish eligibility lists from which applicants will be called for work as operator, collector, porter and other miscellaneous entry-level positions for a two-year period--June 1977 through June 1979. About 31,000 persons registered following an intensive campaign. The names of 800 women, 800 white males and 800 minority males were drawn and listed.

A major challenge was presented during the year because the budget allocation for Workmen's Compensation claims remained at the 1976 level while the weekly basic compensation rate increased by law effective January 1, 1977, and again in October of 1977. At year's end, there was every indication that costs had been controlled within the allocation despite the rise in the compensation rate.

During the year, 6,500 physical examinations were given in the medical clinic in connection with pre-employment, annual examinations required by law for operating personnel, and exams for those returning to work from sick or injured status.

CHAPTER I

The first part of the book is devoted to a general survey of the history of the subject. It begins with a discussion of the early attempts to explain the phenomena of life, and then proceeds to a consideration of the more recent theories. The author shows how the scientific method has been applied to the study of life, and how the various branches of biology have developed. He also discusses the influence of the environment on the development of the individual, and the role of heredity in the transmission of characteristics.

The second part of the book is devoted to a detailed study of the various branches of biology. It begins with a discussion of the structure and function of the cell, and then proceeds to a consideration of the various tissues and organs of the body. The author also discusses the various processes of life, such as growth, development, and reproduction, and the influence of the environment on these processes.

CHAPTER II

The third part of the book is devoted to a study of the various branches of biology. It begins with a discussion of the structure and function of the cell, and then proceeds to a consideration of the various tissues and organs of the body. The author also discusses the various processes of life, such as growth, development, and reproduction, and the influence of the environment on these processes.

The fourth part of the book is devoted to a study of the various branches of biology. It begins with a discussion of the structure and function of the cell, and then proceeds to a consideration of the various tissues and organs of the body. The author also discusses the various processes of life, such as growth, development, and reproduction, and the influence of the environment on these processes.

CHAPTER III

The fifth part of the book is devoted to a study of the various branches of biology. It begins with a discussion of the structure and function of the cell, and then proceeds to a consideration of the various tissues and organs of the body. The author also discusses the various processes of life, such as growth, development, and reproduction, and the influence of the environment on these processes.

The sixth part of the book is devoted to a study of the various branches of biology. It begins with a discussion of the structure and function of the cell, and then proceeds to a consideration of the various tissues and organs of the body. The author also discusses the various processes of life, such as growth, development, and reproduction, and the influence of the environment on these processes.

The seventh part of the book is devoted to a study of the various branches of biology. It begins with a discussion of the structure and function of the cell, and then proceeds to a consideration of the various tissues and organs of the body. The author also discusses the various processes of life, such as growth, development, and reproduction, and the influence of the environment on these processes.

Personnel

During the year, new training programs were designed and others reviewed, so as to meet the expanded goals of the Authority. A new program, Basic Orientation for Supervisors, was implemented and attended by 50 supervisors. Another program, Supervisory Indoctrination Program, was activated and attended by 49 supervisors. The Management Institute was redesigned to include presentations by department heads and key managers. Certificates were awarded to 44 persons completing this program.

The Employee Educational Assistance Plan was upgraded and 62 employees were assisted. Federal grants of \$53,199 were obtained, making it possible for 14 managers to attend transit-related programs at colleges or universities.

Added to the New Operator Training Program was a new segment emphasizing passenger relations and community awareness. A \$137,902 federal grant was awarded to complete work on a testing program for use in selecting bus operators in compliance with Equal Employment Opportunity guidelines.

The problem of absenteeism was countered in part by instruction on the effective use of progressive discipline and/or referral to the Employee Services Unit for counseling of employees with alcoholic, drug or other behavioral problems.

Assistance was provided to employees seeking to better utilize their skills and training through the Position Vacancy Notice program. More than 200 notices were distributed and, as a result, more than 1,500 applications were processed. There was also extensive participation in wage and salary surveys, either initiated by the Authority or in response to inquiries from numerous public and private sector agencies.

Affirmative Action

In addition to the job lottery program, there was continuous involvement by this section in the development of the Revised Affirmative Action Program, adopted by the Board of Directors at its meeting on December 28, 1977. Throughout the year, several discrimination claims were reviewed for validity and remedial action taken where warranted.

CHAPTER I

The first part of the book is devoted to a general survey of the subject. It begins with a definition of the term "philosophy" and then proceeds to a discussion of the various branches of the subject. The author then discusses the history of philosophy and the different schools of thought that have arisen over the centuries.

In the second part of the book, the author discusses the philosophy of the ancients. He begins with the pre-Socratic philosophers and then discusses the great philosophers of the classical period, including Plato, Aristotle, and the Stoics. He then discusses the philosophy of the Middle Ages and the Renaissance.

The third part of the book is devoted to a discussion of the philosophy of the modern period. It begins with the philosophy of the 17th century, including Descartes, Spinoza, and Locke. It then discusses the philosophy of the 18th century, including Kant and Hegel. Finally, it discusses the philosophy of the 19th century, including Schopenhauer, Nietzsche, and the various schools of thought that arose in the late 19th and early 20th centuries.

CHAPTER II

The first part of the second chapter is devoted to a discussion of the philosophy of the 17th century. It begins with a discussion of Descartes' philosophy and then proceeds to a discussion of Spinoza's and Locke's philosophies. The author then discusses the philosophy of the 18th century, including Kant's philosophy and Hegel's philosophy.

OFFICE OF THE TREASURER-CONTROLLER

On September 1, \$75,000,000 bonds were sold to fund the expanding capital improvement program. These bonds raised the total amount issued since 1964 to \$366,865,000, of which \$310,185,000 were outstanding as of September 1, 1977. This issue was rated A 1 by Moody's and was sold for an average interest rate of 5.93 percent.

Development of a strong system of internal controls over the expenditure of capital expansion funds was completed in 1977. This effort began in 1976 when the internal audit staff was redirected to spending all its time on auditing third party contracts. Tangible results are now being felt through the adjustments being made.

In addition, a Capital Program Control Section was established to work full time on maintaining fiscal control over the program. While responsibility for completion of capital improvements projects within budget remains with the Construction Directorate, this section provides an independent control over the projects by controlling all changes made to approved project budgets and by monitoring the project's physical and financial status to ensure problems are identified on a timely basis.

A major development effort in 1977 was a comprehensive Equal Employment Opportunity Commission Reporting System. The objective of this system is to measure the hiring and employment opportunities for minority applicants.

A pilot program employing vacuum revenue collection equipment on the Light Rail Vehicles has been a success. This system mechanically extracts coin from the farebox on the vehicles, sorts it, and deposits it directly into a high security container. These containers are delivered directly to the bank for counting a deposit. This pilot program will enable the Authority to assess the potential of this system for application to bus and trackless trolley operations.

The implementation of the requirements of Section 15 of the UMTA Act of 1964 is progressing. This requirement, known as Project FARE (Financial Accounting and Reporting Elements) is mandated by UMTA in order to maintain qualification for federal grant assistance after July 1, 1978. It consists of a uniform system of accounts and records designed to assist public transportation systems, federal, state and local governments, and the public in defining and evaluating public sector transit investment decision. Most importantly, FARE should greatly improve the Authority's ability to evaluate its own operations and their cost.

In conjunction with implementation of FARE a review is being made of the account structure of our Responsibility Accounting system and revisions to functional breakdowns of expenses are being made to make it more responsive to the needs of management.

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MATERIALS DIRECTORATE

The Materials Directorate, which handled a total volume of more than \$82 million in 1977, established a new Materials Distribution Center at the Authority's Everett Complex. The Center, to which about 95 percent of the purchasing function has been relocated, resulted from the complete renovation and modernization of 70,000 square feet of existing space to provide new facilities for the Purchasing and Inventory Control Office, the automotive and cable warehouse, and the insurance stock warehouse.

Organized into five divisions, all reporting to the Director of Materials, this Directorate is responsible for purchasing, receiving, storing, and distributing materials in such quantities as are necessary for the successful support and operation of the various departments within the Authority. The following is a summary of the efforts and accomplishments of these five divisions:

Purchasing & Inventory Control

The Team Purchasing concept was adopted in 1977 with the goal of providing for a more efficient purchasing process while simultaneously introducing several job enrichment concepts. The new teams consist of buyers, inventory analysts, and administrative/clerical personnel. The teams are assigned specific tasks, and their main objectives are to purchase material at minimum cost in accordance with established Authority procurement procedures, and to review records of consumption to assure for a most economical method of inventory control.

One of the many significant purchases was the navy blue uniforms for the 3500 operating personnel. After numerous meetings to formulate specifications for the first revision in the uniform since 1963, bids were finally obtained totaling about \$640,000.

Purchasing Analysis & Specifications

This division develops procurement techniques, procedures, and specifications designed to minimize costs and maintain or improve product quality. During the year, the division:

- Established a combined purchasing section among six transit operating properties in order to issue joint bid proposals when possible.
- Published a vendor procurement policy and procedures manual.
- Developed new sources of supply for rail maintenance material realizing a savings in excess of \$60,000, with an average unit cost reduction of 50 percent.
- Conducted exhibitions and seminars in conjunction with the Office of Affirmative Action and the New England Minority Purchasing Council with the objective of promoting small and minority operated businesses within the community.

CHAPTER I

The first part of the book is devoted to a general survey of the subject. It begins with a definition of the term "philosophy" and then proceeds to a discussion of the various branches of the subject. The author then discusses the history of philosophy and the different schools of thought that have developed over the centuries.

The second part of the book is devoted to a more detailed examination of the various branches of philosophy. It begins with a discussion of metaphysics and then proceeds to a discussion of epistemology, ethics, and politics. The author discusses the different theories and arguments that have been put forward in each of these fields.

The third part of the book is devoted to a discussion of the philosophy of science. It begins with a discussion of the nature of science and then proceeds to a discussion of the different theories of science. The author discusses the different methods of scientific inquiry and the different ways in which scientific theories are developed and tested.

The fourth part of the book is devoted to a discussion of the philosophy of language. It begins with a discussion of the nature of language and then proceeds to a discussion of the different theories of language. The author discusses the different ways in which language is used and the different ways in which it is understood.

The fifth part of the book is devoted to a discussion of the philosophy of mind. It begins with a discussion of the nature of the mind and then proceeds to a discussion of the different theories of mind. The author discusses the different ways in which the mind is understood and the different ways in which it is studied.

The sixth part of the book is devoted to a discussion of the philosophy of art. It begins with a discussion of the nature of art and then proceeds to a discussion of the different theories of art. The author discusses the different ways in which art is created and the different ways in which it is appreciated.

The seventh part of the book is devoted to a discussion of the philosophy of religion. It begins with a discussion of the nature of religion and then proceeds to a discussion of the different theories of religion. The author discusses the different ways in which religion is practiced and the different ways in which it is understood.

The eighth part of the book is devoted to a discussion of the philosophy of law. It begins with a discussion of the nature of law and then proceeds to a discussion of the different theories of law. The author discusses the different ways in which law is created and the different ways in which it is enforced.

Central Stores & Inventory Coordination

This division, with storeroom facilities at Everett, Charlestown and Brookline, was involved in the Everett storerooms rehabilitation and modernization program. The new storerooms are now fully equipped with modern racks, shelving, and handling equipment allowing for a more efficient materials distribution process. To insure proper inventory volume, this division coordinates its efforts with the Purchasing Division.

Capital Procurement

This division, which purchases all capital items at minimum cost consistent with Authority standards and manages all related contractual matters, placed the following major contracts or purchase orders in 1977:

- 90 AM General buses
- 25 locomotive-hauled trailer coaches
- 5 diesel locomotives
- 50 propulsion modification kits and heating unit systems for PCC cars (streetcars)
- 100 air compressors for No. 4 rapid transit cars (Blue Line)
- 36 bullet resistant collectors' booths
- 3 steam generators and a combustion turbine generator package for the South Boston Power Station
- FM two-way radio equipment for the Commuter Railroad System, operating from North Station
- 2 switch assemblies for the Red Line Extension to Braintree

Transit Car Procurement

This division is providing, under the Authority's Capital Program, effective and economical administration for the procurement of the 70 Blue Line and 120 Orange Line vehicles. Also included is the management of all contractual, administrative, and financial matters relating to this \$104 million effort.

THE UNIVERSITY OF CHICAGO

OFFICE OF THE DEAN OF STUDENTS
540 EAST 58TH STREET, CHICAGO, ILL. 60637
TELEPHONE (312) 937-1234
FAX (312) 937-1235

MEMORANDUM

TO: THE DEAN OF STUDENTS
FROM: THE DEAN OF STUDENTS
SUBJECT: [Illegible]

DATE: [Illegible]

RE: [Illegible]

1. [Illegible]

2. [Illegible]

3. [Illegible]

4. [Illegible]

5. [Illegible]

6. [Illegible]

7. [Illegible]

8. [Illegible]

9. [Illegible]

OFFICE OF THE GENERAL COUNSEL

The Office of the General Counsel provides legal services to other departments and to the Chairman and the Board of Directors. It handles the legal aspects of the Authority's relationships with federal, state and local governments and with private business.

The principal activity within the General Counsel's Office pertains to injury and damage suits in which the MBTA is a party. These suits result from motor vehicle accidents, accidents on the Authority's property, and similar other occurrences. Two-thirds of the General Counsel's staff works in this area in such capacities as investigators, adjusters, legal aides, trial attorneys and clerical personnel.

The year 1977 saw the reinsurance market collapse. Rates rose at an astronomical rate, and the amount of retention, or self-insurance, did likewise. The largest single finding in a tort case involving the Authority was returned against the Authority. The finding was for \$475,000, but interest and costs made the final payment over \$697,000.

Another major activity is work related to land damage suits resulting from land takings, right-of-way and eminent domain proceedings. Five persons are engaged in this function. The longest land damage trial against the Authority, almost 18 weeks before a jury, was concluded in favor of the Authority.

During the year, there was increased activity in suits being brought by many unsuccessful bidders for materials, construction, etc. One which may have the greatest impact on the Authority's future construction goals and schedules is the suit brought in the Federal Court by Perini Construction Corporation in connection with the contract award for the construction of the South Cove Tunnel.

Other functions are performed by the Railroad Labor Section, the Legislative Section, the Contract Preparation Section and the Hearing Officer Section.

1977 Legislation

The following laws affecting the Authority were enacted during the 1977 Session of the General Court:

- Chapter 207 - An Act providing for a public hearing in any significant service changes by the Massachusetts Bay Transportation Authority.
- Chapter 231 - An Act requiring notice to the Massachusetts Bay Transportation Authority relative to certain road and highway repairs.
- Chapter 356 - An Act providing for a comprehensive rail transit, accelerated highway and railroad improvement bonding authorization for the Commonwealth.

- Chapter 376 - An Act directing the Massachusetts Bay Transportation Authority to place a plaque at its Wellington Station in memory of Gerald H. Ogonosky.
- Chapter 640 - An Act relative to the relocation of utility facilities on certain Massachusetts Bay Transportation Authority construction projects.
- Chapter 726 - An Act directing the Massachusetts Bay Transportation Authority to transfer the West Fourth Street Bridge in the City of Boston to the Department of Public Works.
- Chapter 873 - An Act providing for the retention of a ticket agent at the commuter railroad station located in the Town of Sharon, operated by the Massachusetts Bay Transportation Authority.
- Chapter 877 - An Act directing the Metropolitan District Commission to convey certain parcels in the City of Revere to the Massachusetts Bay Transportation Authority and the Massachusetts Bay Transportation Authority to lease air rights over certain parcels in the City of Revere to the City of Revere.
- Chapter 970 - An Act requiring competitive bidding statutes governing construction contracts to include certain additional awarding authorities.

The following resolves which affect the Authority were passed during the 1977 Session of the General Court:

- Resolve 2 - directing the Massachusetts Bay Transportation Authority to make an investigation and study relative to police protection in the Authority's rapid transit stations.
- Resolve 9 - authorizing the continuance of the study by the Massachusetts Bay Transportation Authority relative to police protection in the Authority's rapid transit stations.

1. The first part of the report is devoted to a general survey of the situation in the country.	100
2. The second part of the report is devoted to a detailed analysis of the economic situation.	150
3. The third part of the report is devoted to a detailed analysis of the social situation.	200
4. The fourth part of the report is devoted to a detailed analysis of the political situation.	250
5. The fifth part of the report is devoted to a detailed analysis of the cultural situation.	300
6. The sixth part of the report is devoted to a detailed analysis of the environmental situation.	350
7. The seventh part of the report is devoted to a detailed analysis of the international situation.	400
8. The eighth part of the report is devoted to a detailed analysis of the future prospects.	450
9. The ninth part of the report is devoted to a detailed analysis of the conclusions.	500
10. The tenth part of the report is devoted to a detailed analysis of the recommendations.	550
11. The eleventh part of the report is devoted to a detailed analysis of the annexes.	600
12. The twelfth part of the report is devoted to a detailed analysis of the bibliography.	650
13. The thirteenth part of the report is devoted to a detailed analysis of the index.	700
14. The fourteenth part of the report is devoted to a detailed analysis of the appendices.	750
15. The fifteenth part of the report is devoted to a detailed analysis of the summary.	800
16. The sixteenth part of the report is devoted to a detailed analysis of the introduction.	850
17. The seventeenth part of the report is devoted to a detailed analysis of the conclusion.	900
18. The eighteenth part of the report is devoted to a detailed analysis of the final remarks.	950
19. The nineteenth part of the report is devoted to a detailed analysis of the closing remarks.	1000
20. The twentieth part of the report is devoted to a detailed analysis of the final conclusions.	1050

The following legislative proposals were filed for consideration by the 1978 Session of the General Court:

1. An Act relative to the financing of the Massachusetts Bay Transportation Authority.

This proposal provides 50 percent contract assistance for MBTA net cost of service and 100 percent for the Authority's net additional expense of providing commuter rail service to outside communities. This is a permanent proposal.

2. An Act relative to the reimbursement of fuel and special fuel excises to those providing mass transportation services.

Adoption of this proposal would provide 100 percent reimbursement for fuel excises not currently reimbursed.

3. An Act relative to the transfer of all vehicular bridges carrying public ways over the tracks or rights of way of railroads within the Commonwealth.

This proposal provides that the Massachusetts Department of Public Works take over certain vehicular bridges owned by the MBTA. Legislation previously enacted provided that the MDPW take over care and control of railroad bridges.

4. An Act relative to compliance with federal law, regulation and practice by the Massachusetts Bay Transportation Authority.

Section 29 of Chapter 161A directs the Authority to obtain federal funds. The third sentence of Section 29 provides, in essence, that federal law, regulations and practices governing federal assistance shall override any inconsistent provisions of Chapter 161A. This proposal would include all laws relating to the MBTA.

5. An Act authorizing and directing the Metropolitan District Commission to convey certain parcels of land in the Cities of Somerville and Medford to the Massachusetts Bay Transportation Authority and to grant permanent surface and subsurface easements for drainage purposes.

This legislation is necessary in order to comply with the agreement between the MDC and the MBTA, dated December 8, 1972.

6. An Act further regulating smoking in public conveyances.

The present statute, passed in 1968, contains language providing that one must be requested to cease smoking. This had led to many confrontations between an alleged offender and the police. This legislation deletes the language requiring the request.

and in the treatment of the various forms of the disease, as well as in the prevention of its recurrence.

The following are the principal points to be considered in the treatment of the disease:

1. The patient should be kept in a quiet room, and should be allowed to rest as much as possible.

2. The diet should be light and easily digestible, and should be given in small quantities at frequent intervals.

3. The patient should be kept at a normal temperature, and should be given such treatment as may be necessary to maintain it.

4. The patient should be given such treatment as may be necessary to relieve the various symptoms of the disease.

5. The patient should be given such treatment as may be necessary to prevent the recurrence of the disease.

6. The patient should be given such treatment as may be necessary to maintain the health of the patient.

7. The patient should be given such treatment as may be necessary to prevent the recurrence of the disease.

8. The patient should be given such treatment as may be necessary to maintain the health of the patient.

9. The patient should be given such treatment as may be necessary to prevent the recurrence of the disease.

10. The patient should be given such treatment as may be necessary to maintain the health of the patient.

11. The patient should be given such treatment as may be necessary to prevent the recurrence of the disease.

7. An Act authorizing and directing the City of Cambridge to convey to the Massachusetts Bay Transportation Authority certain easement rights needed for its Red Line Northwest tunnel construction.

This proposal allows for encroachments such as temporary and permanent easements needed for construction of the Red Line through Cambridge to Alewife.

8. An Act authorizing and directing the Metropolitan District Commission to convey to the Massachusetts Bay Transportation Authority certain parcels of land in the City of Boston.

This involves two MDC park properties which will be necessary for Southwest Corridor construction.

9. An Act authorizing and directing the Metropolitan District Commission to convey certain parcels of land and easements in the Cities of Cambridge and Arlington and more specifically referred to as the Alewife Area to the Massachusetts Bay Transportation Authority.

This proposal allows for encroachments such as temporary and permanent easements needed for construction of the Red Line at Alewife.

THE
OFFICE OF THE
SECRETARY OF THE
NAVY
WASHINGTON, D. C.

TO THE
HONORABLE
MEMBERS OF THE
NAVY
DEPARTMENT
WASHINGTON, D. C.

FOR THE
YEAR
ENDING
JUNE 30, 1900

THE
NAVY
DEPARTMENT
WASHINGTON, D. C.

THE
NAVY
DEPARTMENT
WASHINGTON, D. C.

WHERE THE RIDERS ARE

Revenue from transportation--the rider's fare--pays for approximately one-fourth of the cost of the public transportation network known as the MBTA.

The tables below show the revenue from the various types of transportation the MBTA operates on the surface and on rails. Revenue to Commuter Railroads is not included in the (T) total Transportation Revenues because this (T) service is operated by the Boston & Maine Corporation and these revenues are included as a reduction in the Commuter Railroad subsidy costs. The streetcar and bus revenue figures from each "rating station"--the garage where bus and streetcar operators pick their route on the basis of their seniority rating--gives a further breakdown of where people use public transportation.

Revenue from Transportation, 1977

Rapid Transit

Orange Line (Oak Grove-Forest Hills)	\$ 6,442,339
Blue Line (Bowdoin-Wonderland)	1,566,116
Red Line (Harvard-Ashmont)	5,674,603
Red Line (South Shore Extension in Quincy)	2,910,931
Green Line Central Subway (Kenmore-Lechmere)	6,234,900
<u>Total Rapid Transit Lines</u>	<u>\$22,828,889</u>

Surface Lines

Streetcar (Green Line: Riverside, Beacon, Arborway, Commonwealth; Mattapan-Ashmont)	\$ 5,515,980
Trackless Trolley (Cambridge, Belmont, Watertown)	1,327,790
Bus (177 Routes)	23,634,521
<u>Total Surface Lines</u>	<u>\$30,478,291</u>

Chartered Bus

	\$ 165,559
<u>TOTAL TRANSPORTATION REVENUE</u>	<u>\$53,472,739</u>

Streetcar Revenue, 1977 by Rating Stations

Reservoir (Green Line: Beacon and Commonwealth)	\$2,807,228
Riverside (Green Line)	1,694,065
Arborway (Green Line)	992,925
Mattapan-Ashmont	21,762
<u>TOTAL STREETCAR REVENUE</u>	<u>\$5,515,980</u>

Bus Revenue, 1977 by Rating Stations

Cabot-Albany, Boston	\$ 7,635,167
Arborway, Boston	3,714,798
Somerville and Arlington Heights	3,361,005
Salem Street, Medford; Charlestown; Eagle Street, East Boston	5,468,606
Lynn	1,752,090
Quincy	1,702,855
<u>TOTAL BUS REVENUE</u>	<u>\$23,634,521</u>

Revenue to Commuter Railroads

North Station	\$ 5,059,460
South Station	3,527,283
<u>Total Commuter Railroads</u>	<u>\$ 8,586,743</u>

PUBLIC TRANSPORTATION DEFICIT: A BRIEF HISTORY

For nearly 60 years—since 1918--public policy in Massachusetts has been that the transportation network in Greater Boston is a public service of such benefit to individuals, businesses and government that the public through taxation pays the difference between the income and the expenses of operating the service.

That tradition began July 1, 1918 when five public trustees began operating the Boston Elevated Railway under the lease conditions of the Public Control Act. This Act was passed May 22, 1918, six years after the Boston Elevated Railway Co. reported its first deficit of \$492,000 in 1912. In 1913, the company lost \$496,000. It made small surpluses in 1914, 1915 and 1916, but in 1917 it lost \$118,000. In the first half of 1918, when it was still under private control, losses amounted to \$572,000. But maintenance of the plant had been deferred as the company awaited public takeover. Consequently, a large public investment had to be made and the deficit for the first 12 months of public control was \$3.1 million.

In 51 of the 59 years since 1918, public transportation has incurred a deficit. The eight years of surplus were 1922, 1923, 1925, 1927, 1928, 1929, 1942 and 1943. The surplus was never more than \$1.9 million. The Metropolitan Transit Authority, which ran the system from 1948 through August 3, 1964, had deficits ranging from \$2.8 million to \$21 million.

The source of public support for public transit, however, continues to grow. The Federal Government is now providing operating assistance under the Urban Mass Transportation Assistance Act of 1974. The allocations to the MBTA are as follows: for the 1975 federal fiscal year, \$6,532,254; 1976 fiscal year, \$10,887,090; Transition Quarter, \$2,720,900; 1977 fiscal year, \$14,148,600; fiscal 1978, \$16,869,500; fiscal year 1979, \$18,502,000; and fiscal year 1980, \$16,869,500. During 1977, the Authority became eligible for an additional federal grant of \$5,338,500 to assist in the funding of operating commuter railroad service. As of December 31, 1977, the Authority had received a total of \$51,143,777. This Federal aid, combined with continuing state and local aid maintains the tradition of public support for public transportation in the Boston area. Otherwise, because total expenses are four times greater than the revenue from fareboxes, a passenger now paying 25 cents a ride would have to pay one dollar a ride. Needless to say, at one dollar a ride, ridership on the MBTA which carries about 60 percent of the rush hour commuters, would plummet with severe adverse effects on the development of Greater Boston.

THEORY OF THE EARTH AND ITS HISTORY

The theory of the earth and its history is a branch of geology which deals with the origin and development of the earth and its various parts. It is a science which seeks to explain the processes which have shaped the earth and its features, and to determine the sequence of events which have taken place since the earth was first formed. The theory of the earth and its history is based on the study of the earth's rocks and fossils, and on the principles of geology. It is a science which is constantly developing, as new discoveries are made and new theories are proposed. The theory of the earth and its history is a branch of geology which deals with the origin and development of the earth and its various parts. It is a science which seeks to explain the processes which have shaped the earth and its features, and to determine the sequence of events which have taken place since the earth was first formed. The theory of the earth and its history is based on the study of the earth's rocks and fossils, and on the principles of geology. It is a science which is constantly developing, as new discoveries are made and new theories are proposed.

MBTA ASSESSMENT PROCEDURES

A question frequently heard from our customers is "how is my town's MBTA assessment determined?" All 79 cities and towns in the MBTA district pay a share of the MBTA's yearly deficit or net cost of service. The assessment formulas for sharing the deficit were originally spelled out in state legislation passed in 1964 when the old MTA district, serving 14 cities and towns, was enlarged to the present regional transportation district and renamed the MBTA. The formulas have been amended by the legislature from time to time in an effort to make the assessment more fair and equitable.

The legislation defines two basic types of MBTA service, "express service" and "local service". Express service refers to rapid transit service on controlled rights of way, while local service refers to MBTA buses, trackless trolleys and streetcars in local streets. The net cost of providing each of these types of service is calculated separately and allocated by a different formula.

type of service	portion of deficit	who pays	basis for assessment
EXPRESS	75%	all 79 cities & towns	number of commuters
	25%	cities and towns with rapid transit & R.R.	boarding counts (except new stations)
	50%	65 cities & towns 14 cities & towns	population (1970)
LOCAL	50%	cities & towns with bus service	share of losses sustained locally

Express Service. Legislation has divided the assessment for the cost of express service into two parts, a 75% portion, and a 25% portion, each distributed in a different fashion.

The 75% portion of the net cost of express service is shared by all 79 cities and towns in the MBTA, based on the number of "commuters" living in each municipality. The number of commuters in each city and town was determined from the 1970 Federal Census data and included all people who traveled outside their town to their place of work, whether they used public transportation or not. In the case of the City of Boston, the number of commuters was established so that Boston would be responsible for not less than 30% of this 75% portion.

The remaining 25% of the net cost of express service is shared only by those cities and towns that have one or more express service stations. This part of the assessment is proportional to the number of passengers boarding the rapid transit lines at stations in each community. Each year counts are taken to determine the number of passengers boarding at each station and within each town. However, in 1973, the legislature amended the assessment procedure to exclude from the boarding

THE HISTORY OF THE UNITED STATES

The history of the United States is a story of growth and change. From the first settlers to the present day, the nation has evolved through various stages of development. The early years were marked by exploration and settlement, followed by a period of rapid expansion and industrialization. The American Revolution and the Civil War were pivotal moments in the nation's history, shaping its identity and values. The 20th century brought significant social and political changes, including the rise of the federal government and the struggle for civil rights. Today, the United States continues to face new challenges and opportunities, reflecting its ongoing journey as a nation.

Year	Event	Significance
1492	Columbus's voyage to the Americas	First European contact with the Americas
1607	First permanent English settlement in Jamestown	Beginning of permanent European presence in North America
1776	Declaration of Independence	Establishment of the United States as an independent nation
1789	Adoption of the Constitution	Foundation of the federal government
1861-1865	Civil War	Resolution of the issue of slavery and preservation of the Union
1901	Spanish-American War	Establishment of the United States as a world power
1914-1918	World War I	United States' entry into global conflicts
1929-1933	Great Depression	Major economic crisis and the rise of the New Deal
1941-1945	World War II	United States' role in defeating the Axis powers
1954	Supreme Court decision in Brown v. Board of Education	End of legal segregation in public schools
1963	Assassination of Martin Luther King Jr.	Peak of the Civil Rights Movement
1969	Apollo 11 moon landing	First human landing on the Moon
1973	End of the Vietnam War	Withdrawal of U.S. troops from Vietnam
1980	Iranian Revolution	Overthrow of the Shah of Iran
1989	End of the Cold War	End of the bipolar world order
1991	Gulf War	U.S. military intervention in the Middle East
1993	Clinton's impeachment	First U.S. president to be impeached
1994	Norfolk Bridge collapse	Major infrastructure failure
1997	Clinton's impeachment	Second U.S. president to be impeached
1998	Clinton's impeachment	Third U.S. president to be impeached
1999	Clinton's impeachment	Fourth U.S. president to be impeached
2001	9/11 attacks	Major terrorist attacks on the United States
2001-2009	Bush's presidency	Second term of George W. Bush
2009-2017	Obama's presidency	First African American president
2017-2021	Trump's presidency	First president born in the 21st century
2021	Biden's inauguration	Joe Biden becomes the 46th president

The history of the United States is a story of growth and change. From the first settlers to the present day, the nation has evolved through various stages of development. The early years were marked by exploration and settlement, followed by a period of rapid expansion and industrialization. The American Revolution and the Civil War were pivotal moments in the nation's history, shaping its identity and values. The 20th century brought significant social and political changes, including the rise of the federal government and the struggle for civil rights. Today, the United States continues to face new challenges and opportunities, reflecting its ongoing journey as a nation.

counts passengers boarding at new rapid transit stations opened after July 1973. This amendment means that a new station in a community will not result in an increase in its assessment for the 25% portion of express service costs.

Local Service. Local service refers to buses, trackless trolleys, and streetcars operating on local streets. As in express service, the formula for assigning the local service deficit is divided into two parts, in this case two equal or 50% portions. Half of the local service deficit is allocated on the basis of population, as determined by the most recent Federal Census (1970); but on the weight of 14 Cities and Towns and the 65 Cities and Towns independently. The other 50% of the deficit from local service operations is shared by those cities and towns that have such service, and is based on the proportion of losses incurred in each city or town.

To determine the operating loss incurred in each community, costs are first identified with a mode of service--bus, trackless trolley and streetcar. All direct costs are identified directly with the appropriate mode, and indirect costs are allocated to modes largely based upon the direct charges to each mode each month. Costs by mode are then allocated to specific routes by means of one of six bases depending upon the type of expense involved. Direct costs of operation and maintenance of each rating station (depot), are allocated only to routes emanating from that rating station. For example, costs of operating and maintaining routes from the Quincy Garage are allocated only to the routes in the Quincy Rating Station.

Farebox revenue is sampled on each route four times yearly, and the difference between operating cost and annual revenue determines the yearly profit or loss for each route. This profit or loss is allocated to each city or town on the route, on the basis of mileage. If a town elects to have no local service, buses then make no stops in that town, and the profit or loss from routes passing through that town is distributed among the other towns on the route. For all cities and towns with local MBTA service, the losses and profits from the routes in the community are totaled. Half of the MBTA's local service assessment is then based on the percentage of local service operating losses incurred in each municipality.

As an example of local service assessment, consider a six-mile long bus route, with four miles in Town A and two miles in Town B. Assume that the operating cost for the route was \$100,000 a year. Assume also that farebox revenue on the route was \$40,000 a year. The operating deficit would be \$60,000 a year, the difference between operating cost and revenue. Half of this \$60,000 deficit (\$30,000) would be allocated among the 14 Cities and Towns and the 65 Cities and Towns on the basis of population, and half would be allocated to Towns A and B. Town A would have to pay \$20,000 and Town B would be assessed \$10,000 because the bus route operated twice as many miles in Town A as in Town B.

The MBTA assessment procedures can be summed up by pointing out two objectives in the formulas. The first objective is to recognize that the 79 cities and towns in the MBTA district comprise one regional transportation district, that all municipalities benefit by the system, and therefore all must share some of the deficit. The second objective is to assess a greater portion of the cost of operating the MBTA on those cities and towns that get a greater degree of service. To relieve the burden on local governments, in recent years the state has begun to pay for part of the MBTA deficit. The Federal government is also providing operating subsidies for mass transit under legislation enacted in 1974.

The first part of the document is a letter from the Secretary of the Board of Directors to the Board of Directors. The letter is dated January 1, 1900, and is addressed to the Board of Directors. The letter is signed by the Secretary of the Board of Directors.

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COMPREHENSIVE PROGRAM FOR MASS TRANSPORTATION

The Executive Office of Transportation and Construction has been responsible for the Comprehensive Program for Mass Transportation since January 1, 1975, in accordance with Chapter 161A, Section 5(g) and (h), of the General Laws of the Commonwealth as amended by Section 7 of Chapter 1140, Acts of 1973.

The statute states that the Authority's capital investment program and plans for mass transportation "shall be developed in consultation and cooperation with the Authority, and in consultation with the Executive Office of Communities and Development, the Metropolitan Area Planning Council, and such other agencies of the Commonwealth or of the Federal Government as may be concerned with said program and plans." The program and any revisions are subject to the approval of the Advisory Board.

The program must include a long-range plan for the construction, reconstruction, or alteration of mass transportation facilities within the Authority's district; a schedule for the implementation of the program, and comprehensive financial estimates of cost and revenues.

The Executive Office of Transportation and Construction has prepared a draft Ten-Year Program for Mass Transportation complete with technical supplement. During the year, 10 public workshops on the draft program were held. The program served two purposes: (1) Several meetings were held with the Advisory Board's Transit Development Committee in preparation for submitting the program to the full membership of the Advisory Board for approval. (2) The draft served as the basis for the preparation of the transit portion of the 1977 annual revision of the Transportation Improvement Program, a related document whose annual updating is required by Federal financial assistance for transit projects.

The Joint Regional Transportation Committee, the transportation advisory group to the Metropolitan Planning Organization, also participated in the review of the Program for Mass Transportation and in the formulation of the 1977 revision of the multi-modal Transportation Improvement Program.

COMPREHENSIVE PROGRAM FOR HISTORICAL RESEARCH

The purpose of this program is to provide a comprehensive overview of the historical research process, from the selection of a topic to the final presentation of findings. This program is designed for students and researchers who are new to the field of history or who wish to refresh their knowledge of the research process.

The program is divided into several modules, each focusing on a different aspect of the research process. The first module, "Selecting a Topic," covers the importance of choosing a topic that is both interesting and researchable. The second module, "Formulating a Research Question," discusses the importance of asking a clear and specific question. The third module, "Finding Sources," covers the various types of sources available to historians and the techniques for finding them.

The fourth module, "Evaluating Sources," discusses the importance of assessing the reliability and bias of sources. The fifth module, "Organizing Your Research," covers the importance of keeping track of your findings and organizing them in a way that makes sense. The sixth module, "Writing Your Paper," covers the importance of writing clearly and concisely, and the various parts of a research paper.

The seventh module, "Presenting Your Findings," covers the importance of presenting your research in a clear and engaging way. The eighth module, "Revising Your Paper," discusses the importance of revising your paper based on feedback from others. The ninth module, "Publishing Your Paper," covers the various options for publishing your research. The tenth module, "Maintaining Your Research," discusses the importance of keeping your research up-to-date and accessible.

This program is designed to be a comprehensive overview of the historical research process, from the selection of a topic to the final presentation of findings. It is intended for students and researchers who are new to the field of history or who wish to refresh their knowledge of the research process.



PART II

FINANCIAL STATEMENTS

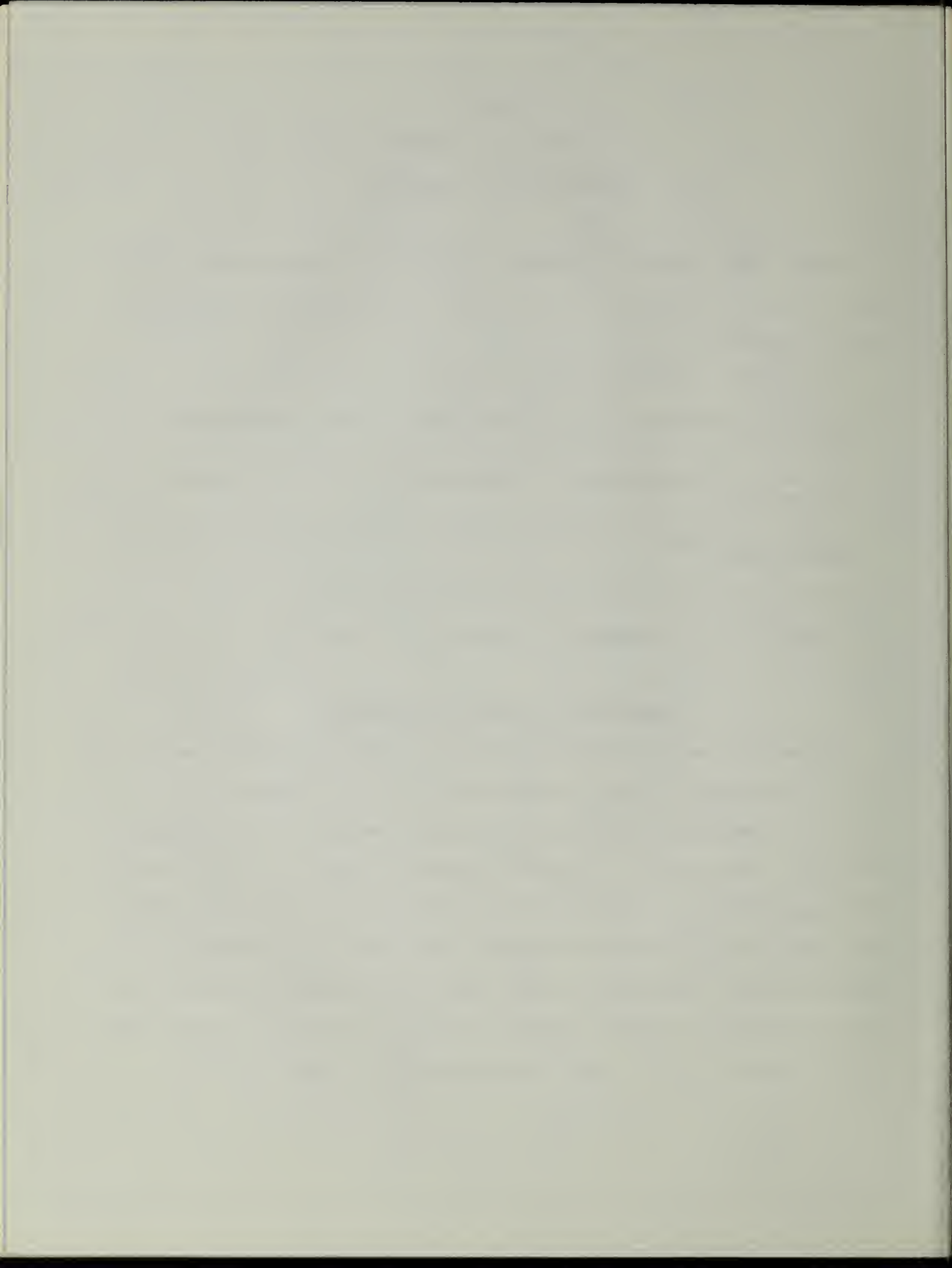
DECEMBER 31, 1977 AND 1976

The Authority's financial statements were audited by Arthur Andersen & Co., independent public accountants, and their report is included with the following financial statements:

- Balance Sheet - December 31, 1977 and 1976
- Statement of Revenue and Cost of Service for the Years Ended December 31, 1977 and 1976
- Statement of Unreimbursed Cost of Service for the Years Ended December 31, 1977 and 1976
- Statement of Changes in Financial Position for the Years Ended December 31, 1977 and 1976
- Statement of Bonds Payable - December 31, 1977 and 1976
- Notes to Financial Statements - December 31, 1977 and 1976

Difference in Financial Presentation

The audited financial statements historically reflect a different amount for "Cost of Service in Excess of Revenue" than is shown on the Authority's "Statement of Net Cost of Service" due to different methods of accounting for certain costs and revenues. The audited statements include in cost of service certain non-cash expenditures such as depreciation (computed based on the useful lives of the assets) and interest accrued on Federal loans, and exclude from operating revenue reimbursements from the state and communities outside the MBTA District, whereas the Authority includes principal payments on debt as an expense in lieu of depreciation, and certain reimbursements in income.



The two amounts are reconciled as follows:

"Cost of Service in Excess of Revenue" per Authority's "Statement of Net Cost of Service"	(\$185,940,652)
ADD: Interest on the Federal Loans not currently assessable, net of property management income and expenses (See Note 11).	(3,257,329)
ADD: Reimbursement for contracted passenger services outside the district, carried by the MBTA as an income item to reduce the amount assessable to other cities and towns	(1,384,148)
ADD: Gasoline and fuel taxes reimbursed by the state carried by MBTA as income.	(412,469)
ADD: The amount that depreciation and amortization expense exceeded bond payments during the year (See Note 1, f paragraph 2, page xiv)	(7,667,418)
Total Cost of Service in Excess of Revenue per Audited Statement	<u>(\$198,662,016)</u>

ARTHUR ANDERSEN & CO.
BOSTON, MASSACHUSETTS

To the Board of Directors of

Massachusetts Bay Transportation Authority:

We have examined the balance sheet and statement of bonds payable of the MASSACHUSETTS BAY TRANSPORTATION AUTHORITY (a political subdivision of the Commonwealth of Massachusetts) as of December 31, 1977, and December 31, 1976, and the related statements of revenue and cost of service, unreimbursed cost of service, and changes in financial position for the years then ended. Our examinations were made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying financial statements present fairly the financial position of the Massachusetts Bay Transportation Authority as of December 31, 1977, and December 31, 1976, and the results of its operations and the changes in its financial position for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

Arthur Andersen & Co.

Boston, Massachusetts,
March 28, 1978.

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY

The following is a list of the names of the students who have been admitted to the University of Chicago for the year 1900-1901. The names are arranged in alphabetical order of the last name. The names of the students who have been admitted to the University of Chicago for the year 1900-1901 are as follows:

Admitted to the University of Chicago for the year 1900-1901:

Admitted to the University of Chicago for the year 1900-1901:

Admitted to the University of Chicago for the year 1900-1901:

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BALANCE SHEET - DECEMBER 31, 1977 AND 1976

A S S E T S

	<u>1977</u>	<u>1976</u>
TRANSPORTATION PROPERTY, at cost (Notes 1 and 6):		
Transportation property in service	\$700,348,789	\$581,350,076
Less - Reserve for depreciation	<u>147,338,782</u>	<u>138,000,457</u>
	\$553,010,007	\$443,349,619
Construction in progress (Notes 1 and 6)	53,717,099	63,071,561
Property held for expansion (Note 11)	<u>22,454,050</u>	<u>58,987,700</u>
	<u>\$629,181,156</u>	<u>\$565,408,880</u>
 SPECIAL FUNDS, consisting of Cash and Certificates of Deposit:		
Construction funds, held by the bond fiscal agent	\$ 62,617,640	\$ 27,255,841
Funds received for relocation of facilities (Note 3)	269,762	269,762
Federal grants and other special funds (Notes 1 and 8)	<u>1,262,383</u>	<u>943,482</u>
	\$ <u>64,149,785</u>	\$ <u>28,469,085</u>
 CURRENT ASSETS:		
Cash	\$ 4,664,337	\$ 2,992,898
Temporary Cash Investments	56,600,876	34,271,696
Accounts receivable -		
Commonwealth of Massachusetts	27,857,485	30,042,372
Federal Department of Transportation (Note 2)	6,278,830	-
Boston Redevelopment Authority (Note 8)	514,196	597,071
Other	5,132,109	2,135,347
Materials and supplies, at average cost	8,123,910	7,570,245
Prepaid expenses	<u>841,962</u>	<u>213,614</u>
	<u>\$110,013,705</u>	\$ 77,823,243
 DEFERRED CHARGES (Notes 1 and 9)	\$ <u>13,210,301</u>	\$ <u>11,711,995</u>
	<u>\$816,554,947</u>	<u>\$683,413,203</u>

The accompanying notes are an integral part
of these financial statements.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BALANCE SHEET - DECEMBER 31, 1977 AND 1976

L I A B I L I T I E S

	<u>1977</u>	<u>1976</u>
LONG-TERM DEBT, exclusive of current maturities (Note 5):		
Bonds payable	\$397,198,299	\$334,532,558
Loans payable to Federal Department of Transportation, including accrued interest of \$8,612,818 in 1977 and \$5,280,801 in 1976 (Note 11)	<u>52,273,133</u>	<u>48,941,263</u>
	<u>\$449,471,432</u>	<u>\$383,473,821</u>
UNREIMBURSED COST OF SERVICE (Note 1)	\$ <u>(5,722,769)</u>	\$ <u>(3,535,379)</u>
CURRENT LIABILITIES:		
Current maturities of bonds payable (Note 5)	\$ 12,334,259	\$ 11,729,259
Notes payable (\$75,000,000 @ 4.50% due March 15, 1978 and \$50,000,000 @ 4.19% due December 30, 1977) (Note 5)	75,000,000	50,000,000
Accounts payable	17,243,469	12,486,546
Accrued liabilities -		
Payroll	1,369,906	1,907,226
Interest	8,568,109	4,806,887
Other	<u>3,711,777</u>	<u>2,105,662</u>
	<u>\$118,227,520</u>	\$ <u>83,035,580</u>
COMMITMENTS AND CONTINGENCIES (Notes 1, 4 and 6)		
DEFERRED CREDITS (Note 3)	\$ <u>6,404,228</u>	\$ <u>6,579,707</u>
GRANTS (Notes 1 and 8):		
Federal grants	\$263,115,405	\$220,230,654
Less - Amortization	<u>26,194,753</u>	<u>17,925,051</u>
	\$236,920,652	\$202,305,603
Boston Redevelopment Authority	11,999,479	11,999,479
Less - Amortization	<u>745,595</u>	<u>445,608</u>
	<u>\$248,174,536</u>	<u>\$213,859,474</u>
	<u><u>\$816,554,947</u></u>	<u><u>\$683,413,203</u></u>

The accompanying notes are an integral part
of these financial statements.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

STATEMENT OF REVENUE AND COST OF SERVICE

FOR THE YEARS ENDED DECEMBER 31, 1977 AND 1976

	<u>1977</u>	<u>1976</u>
OPERATING REVENUE; not including local and Federal assistance:		
Passenger Revenue	\$53,472,739	\$53,122,315
Other	<u>1,964,694</u>	<u>1,956,749</u>
	\$55,437,433	\$55,079,064
OPERATING EXPENSES (Note 10):		
Transportation Service	\$84,268,729	\$79,411,111
Maintenance	43,604,488	41,620,209
Electric Power	14,284,325	13,236,682
Depreciation and amortization (Notes 1 and 8)	19,071,677	15,904,069
General and administrative expenses -		
Salaries and wages	9,361,524	8,854,490
Employee pension and insurance benefits (Notes 1 and 4)	26,153,418	23,548,239
Injuries and damages and workmen's compensation claims (Note 1)	4,379,861	4,365,069
Other	<u>4,744,944</u>	<u>3,934,247</u>
	\$205,868,966	\$190,874,116
Operating loss	\$ (150,431,533)	\$ (135,795,052)
OTHER INCOME, including interest of \$4,454,453 in 1977 and \$3,859,605 in 1976	4,579,221	3,913,318
INTEREST EXPENSE, including \$21,331,477 on long-term debt in 1977 and \$18,442,310 in 1976	(25,792,928)	(21,145,635)
RAILROAD COMMUTER EXPENSE, net, including amortization of the original Railroad Contract Assistance Program of \$325,000 in both 1977 and 1976 (Notes 1, 2 and 9)	<u>(27,016,776)</u>	<u>(17,979,431)</u>
Cost of service in excess of revenue	<u>\$ (198,662,016)</u>	<u>\$ (171,006,800)</u>

The accompanying notes are an integral
part of these financial statements.

THE ANNALS OF THE AMERICAN MEDICAL ASSOCIATION

1917	1918	1919
JANUARY	JANUARY	JANUARY
FEBRUARY	FEBRUARY	FEBRUARY
MARCH	MARCH	MARCH
APRIL	APRIL	APRIL
MAY	MAY	MAY
JUNE	JUNE	JUNE
JULY	JULY	JULY
AUGUST	AUGUST	AUGUST
SEPTEMBER	SEPTEMBER	SEPTEMBER
OCTOBER	OCTOBER	OCTOBER
NOVEMBER	NOVEMBER	NOVEMBER
DECEMBER	DECEMBER	DECEMBER
JANUARY	JANUARY	JANUARY
FEBRUARY	FEBRUARY	FEBRUARY
MARCH	MARCH	MARCH
APRIL	APRIL	APRIL
MAY	MAY	MAY
JUNE	JUNE	JUNE
JULY	JULY	JULY
AUGUST	AUGUST	AUGUST

PUBLISHED MONTHLY
 BY THE AMERICAN MEDICAL ASSOCIATION
 535 N. Dearborn St., Chicago, Ill.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

STATEMENT OF UNREIMBURSED COST OF SERVICE

FOR THE YEARS ENDED DECEMBER 31, 1977 AND 1976

	<u>1977</u>	<u>1976</u>
BALANCE AT BEGINNING OF YEAR	\$ (3,535,379)	\$ (4,485,887)
ADD - Cost of service in excess of revenue	(198,662,016)	(171,006,800)
DEDUCT:		
Cost of service reimbursed by the Commonwealth of Massachusetts to be assessed to the cities and towns constituting the Authority (Note 7)	78,974,567	68,920,494
Contract Assistance, portion of the cost of service paid by the Commonwealth of Massachusetts in accordance with a contract for financial assistance between the Authority and the Commonwealth (Note 7)		
Assistance pursuant to House Bill 1, 1978, pending, and Chapter 363A of the Acts of 1977	62,732,000	56,950,000
Assistance pursuant to Chapter 563 of the Acts of 1964 and Chapter 1140 of the Acts of 1973, as amended	21,532,455	20,468,582
Other	501,564	519,082
Federal Operating Assistance pursuant to the Urban Mass Transportation Act of 1964, as amended		
Section 5 (Note 12)	16,861,566	16,868,565
Section 17 (Note 2)	5,338,500	-
Cost of service reimbursed by the cities and towns outside the Authority's area	1,384,148	1,051,897
State diesel and gasoline fuel taxes reimbursable to the Authority in accordance with Section 2 of Chapter 563 of the Acts of 1964	412,469	405,131
Amortization of Federal grants (Notes 1 and 8)	8,269,702	6,305,902
Amortization of BRA grants (Notes 1 and 8)	299,987	299,987
Amortization of deferred credits (Note 3)	<u>167,668</u>	<u>167,668</u>
BALANCE AT END OF YEAR	\$ <u>(5,722,769)</u>	\$ <u>(3,535,379)</u>

The accompanying notes are an integral part of these financial statements

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
STATEMENT OF CHANGES IN FINANCIAL POSITION
FOR THE YEARS ENDED DECEMBER 31, 1977 AND 1976

	<u>1977</u>	<u>1976</u>
FUNDS WERE USED FOR:		
Cost of service in excess of revenue	\$198,662,016	\$171,006,800
Less - Charge to cost of service in excess of revenue which did not require funds -		
Depreciation of transportation property	(18,458,197)	(15,454,906)
Amortization of deferred charges	(938,480)	(774,164)
Interest accrued on loan from Federal Department of Transportation	<u>(3,331,870)</u>	<u>(1,337,128)</u>
	\$175,933,469	\$153,440,602
Additions to transportation property, net	\$ 82,230,473	\$106,738,555
Increase in special funds	35,680,700	-
Increase in deferred charges	2,436,786	1,573,775
Decrease in bonds payable	12,334,259	11,729,259
Other	<u>19,207</u>	<u>60,088</u>
Total funds used	<u>\$308,634,894</u>	<u>\$273,542,279</u>
FUNDS WERE PROVIDED BY:		
Net cost of service reimbursable by the Commonwealth of Massachusetts for the deficit to be assessed to the cities and towns constituting the Authority	\$ 78,974,567	\$ 68,920,494
Issuance of long term debt	75,000,000	-
Contract assistance received from the Commonwealth of Massachusetts	84,766,019	77,937,664
Federal Operating Assistance	22,200,066	16,868,565
Reimbursements by the Commonwealth of Massachusetts of state diesel and gasoline fuel taxes	412,469	405,131
Reimbursement by cities and towns outside the Authority's area for service provided	1,384,148	1,051,897
Proceeds from loan from the Federal Department of Transportation	-	24,172,750
Grants from Federal and other sources	42,896,147	55,514,811
Decrease in special funds	<u>-</u>	<u>29,153,522</u>
Total funds provided	<u>\$305,633,416</u>	<u>\$274,024,834</u>
RESULTING IN A WORKING CAPITAL INCREASE (DECREASE) OF:	\$ <u>3,001,478</u>	\$ <u>482,555</u>
CHANGES IN ELEMENTS OF WORKING CAPITAL CONSIST OF:		
Increase (decrease) in current assets -		
Cash	\$ 1,671,439	\$ 1,214,360
Temporary cash investments	22,329,180	17,214,769
Accounts receivable	7,007,830	3,110,518
Materials and supplies	553,665	616,217
Prepaid expenses	<u>628,348</u>	<u>(243,477)</u>
	\$ 32,190,462	\$ 21,912,387
Increase (decrease) in current liabilities -		
Current maturities of bonds payable	\$ 605,000	\$ (1,000)
Notes payable	25,000,000	20,000,000
Accounts payable	4,756,923	559,796
Accrued liabilities	<u>4,830,017</u>	<u>871,036</u>
	\$ 35,191,940	\$ 21,429,832
Increase (decrease) in working capital	\$ <u>3,001,478</u>	\$ <u>482,555</u>

The accompanying notes are in integral part
of these financial statements.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

STATEMENT OF BONDS PAYABLE

DECEMBER 31, 1977 AND 1976

Massachusetts Bay Transportation Authority General Transportation System Bonds issued under General Laws, Chapter 161A, Section 23 of the Commonwealth of Massachusetts, 1967 Series A, dated March 1, 1967, 1970 Series A, dated September 1, 1970, 1972 Series A, dated September 1, 1972, 1974 Series A, dated June 1, 1974, and 1977 Series A, dated September 1, 1977 are all payable in annual installments on March 1; interest is payable semiannually on March 1 and September 1.

1967 Series A Bonds - The proceeds of the sale of the 1967 Series A Bonds were required to be used for payment of \$40,000,000 of Bond Anticipation Notes outstanding and the balance of \$70,000,000 was required to be deposited in the Bond Proceeds accounts. These bonds were issued to provide funds for the purposes outlined below. The debt outstanding at December 31, 1977 and 1976 is as follows:

<u>Purpose</u>	<u>First Principal Payment</u>	<u>Year of Maturity</u>	<u>Approximate Annual Payment</u>	<u>Average Interest Rate</u>	<u>1977</u>	<u>1976</u>
Express service transportation facilities	1969	2007	\$1,900,000	3.78%	\$57,000,000	\$58,900,000
Agreement with railroads	1968	1982	325,000	3.75	1,750,000	2,075,000
Buses and other purposes	1968	1979	325,000	3.75	650,000	975,000
Local service transportation facilities	1969	2007	50,000	3.78	1,500,000	1,550,000
Capital cost of certain transportation facilities including yards, shops and rolling stock	1969	2007	650,000	3.78	<u>19,500,000</u>	<u>20,150,000</u>
					<u>\$80,400,000</u>	<u>\$83,650,000</u>

1970 Series A Bonds - The proceeds of the sale of the 1970 Series A Bonds were required to be used for payment of \$5,365,000 of Bond Anticipation Notes outstanding and the balance of \$61,500,000 was required to be deposited in the Bond Proceeds accounts. These bonds were issued to provide funds for the purposes outlined below. The debt outstanding at December 31, 1977 and 1976 is as follows:

<u>Purpose</u>	<u>First Principal Payment</u>	<u>Year of Maturity</u>	<u>Approximate Annual Payment</u>	<u>Average Interest Rate</u>	<u>1977</u>	<u>1976</u>
Express service transportation facilities	1971	2010	\$1,540,000	6.32%	\$50,720,000	\$52,260,000
Buses and other purposes	1971	1982	295,000	6.00	1,435,000	1,730,000
Purchase and improvement of the Cambridge Subway	1971	1980	185,000	6.00	<u>555,000</u>	<u>740,000</u>
					<u>\$52,710,000</u>	<u>\$54,730,000</u>

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

STATEMENT OF BONDS PAYABLE

DECEMBER 31, 1977 AND 1976

(Continued)

1972 Series A Bonds - The proceeds of the sale of the 1972 Series A Bonds were used for payment of \$8,000,000 of Bond Anticipation Notes and the balance of \$32,000,000 was deposited in the Bond Proceeds accounts. These bonds were issued to provide funds for the purposes outlined below. The debt outstanding at December 31, 1977 and 1976 is as follows:

<u>Purpose</u>	<u>First Principal Payment</u>	<u>Year of Maturity</u>	<u>Approximate Annual Payment</u>	<u>Average Interest Rate</u>	<u>1977</u>	<u>1976</u>
Express service transportation facilities and other capital costs of the transportation system	1973	2012	\$865,000	5.25%	\$30,175,000	\$31,040,000
Bus acquisition	1973	1984	295,000	5.40	2,045,000	2,340,000
Bus garages	1973	1984	165,000	5.40	<u>1,155,000</u>	<u>1,320,000</u>
					<u>\$33,375,000</u>	<u>\$34,700,000</u>

1974 Series A Bonds - The proceeds of the sale of 1974 Series A Bonds were deposited in the Bond Proceeds accounts. These bonds were issued to provide funds for the purposes outlined below. The debt outstanding at December 31, 1977 and 1976 is as follows:

<u>Purpose</u>	<u>First Principal Payment</u>	<u>Year of Maturity</u>	<u>Approximate Annual Payment</u>	<u>Average Interest Rate</u>	<u>1977</u>	<u>1976</u>
Express service transportation facilities and other capital costs of the transportation system	1975	2014	\$1,800,000	6.34%	\$66,000,000	\$67,800,000
Bus and trackless trolley acquisition	1975	1986	300,000	7.00	<u>2,700,000</u>	<u>3,000,000</u>
					<u>\$68,700,000</u>	<u>\$70,800,000</u>

1977 Series A Bonds - The proceeds of the sale of 1977 Series A Bonds were deposited in the Bond Proceeds accounts. These bonds were issued to provide funds for the purposes outlined below. The debt outstanding at December 31, 1977 is as follows:

<u>Purpose</u>	<u>First Principal Payment</u>	<u>Year of Maturity</u>	<u>Approximate Annual Payment</u>	<u>Average Interest Rate</u>	<u>1977</u>
Express service transportation facilities and other capital costs of the transportation system	1978	2017	\$1,875,000	5.93%	\$75,000,000

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

STATEMENT OF BONDS PAYABLE

DECEMBER 31, 1977 AND 1976

(Continued)

	<u>1977</u>	<u>1976</u>
Metropolitan Transit Authority Bond, payable in semiannual installments of \$500,000 to December, 2020 -- Interest payable is the interest payable by the Boston Metropolitan District on their contra debt and refunding issues, which for the years ended December 31, 1977 was 4.35% and for December 31, 1976 was 4.43%.	<u>\$42,918,372</u>	<u>\$43,918,372</u>
Rapid Transit Bond, payable in annual installments of \$536,259 to November, 2024 -- Interest is the actual interest on the City of Boston Transit Debt and refunding issues less income collected on the City's transit debt sinking fund, which for the years ended December 31, 1977 was 4.27% and for December 31, 1976 was 4.35%.	<u>\$25,204,186</u>	<u>\$25,740,445</u>

Equipment Serial Bonds:

<u>Year of Maturity</u>	<u>Approximate Annual Payment</u>	<u>Interest Rate</u>	<u>1977</u>	<u>1976</u>
1977	\$219,000	3.00%	-	\$219,000
1978	174,000	3.00	\$174,000	350,000
1981	127,000	1.50	508,000	635,000
1987	127,000	2.90	1,275,000	1,402,000
1988	131,000	2.90	1,441,000	1,572,000
1993	169,000	3.00	2,704,000	2,873,000
1993	<u>100,000</u>	3.20	<u>1,600,000</u>	<u>1,700,000</u>
	<u>\$1,047,000</u>		<u>\$7,702,000</u>	<u>\$8,751,000</u>



THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY
5408 S. DICKINSON DRIVE
CHICAGO, ILL. 60637

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DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY
5408 S. DICKINSON DRIVE
CHICAGO, ILL. 60637

NAME	ADDRESS	CITY	STATE	ZIP
JOHN DOE	1234 N. LAKE	CHICAGO	ILL.	60610
JANE SMITH	5678 E. WINDY	CHICAGO	ILL.	60630
BOB BROWN	9101 S. DICKINSON	CHICAGO	ILL.	60637
ALICE GREEN	2345 W. FULLER	CHICAGO	ILL.	60612
CHARLIE WHITE	3456 N. LAKE	CHICAGO	ILL.	60610
DAVID BLACK	4567 E. WINDY	CHICAGO	ILL.	60630
EVELYN GRAY	5678 S. DICKINSON	CHICAGO	ILL.	60637
FRANK HARRIS	6789 W. FULLER	CHICAGO	ILL.	60612
GRACE KING	7890 N. LAKE	CHICAGO	ILL.	60610
HOWARD LYNN	8901 E. WINDY	CHICAGO	ILL.	60630

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

STATEMENT OF BONDS PAYABLE
DECEMBER 31, 1977 AND 1976
(Continued)

	<u>1977</u>	<u>1976</u>
Construction Bonds:		
2.00%, payable \$102,000 per annum to November 21, 1979, and \$4,590,000 on November 25, 1979	\$4,794,000	\$4,896,000
1.50%, payable \$84,333 per annum to March 1, 1981, and \$3,781,667 on March 1, 1981	4,119,000	4,203,333
2.10%, payable \$22,000 per annum to January 15, 1982, and \$990,000 on January 15, 1982	1,100,000	1,122,000
2.75%, payable \$47,000 per annum to March 1, 1983, and \$2,115,000 on March 1, 1983	2,397,000	2,444,000
2.30%, payable \$10,000 per annum to March 1, 1984, and \$450,000 on March 1, 1984	520,000	530,000
3.00%, payable \$55,000 per annum to July 1, 1988, and \$2,475,000 on July 1, 1988	3,080,000	3,135,000
3.60%, payable \$69,667 per annum to February 1, 1989, and \$3,135,000 on February 1, 1989	3,971,000	4,040,667
3.50%, payable \$19,000 per annum to September 15, 1990, and \$855,000 on September 15, 1990	1,102,000	1,121,000
3.20%, payable \$40,000 per annum to April 15, 1993, and \$1,800,000 on April 15, 1993	<u>2,440,000</u>	<u>2,480,000</u>
	<u>\$23,523,000</u>	<u>\$23,972,000</u>
	\$409,532,558	\$346,261,817
Less - Current maturities of bonds payable	<u>12,334,259</u>	<u>11,729,259</u>
Bonds payable	<u><u>\$397,198,299</u></u>	<u><u>\$334,532,558</u></u>

The accompanying notes are an integral
part of these financial statements.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 1977 AND 1976

(1) Summary of Significant Accounting Policies

(a) Transportation Property

Transportation property is stated at historical cost. Such costs may include MBTA labor costs for employees working on capital projects plus related fringe benefits and an allocated share of general and administrative costs. The cost of funds required to finance the expansion of the transportation system is expensed currently.

(b) Depreciation

Depreciation is provided in the accounts based on the straight-line method at rates which are designed to amortize the original cost of the property over its estimated useful life. The major categories of transportation property and the depreciation rates used in 1977 are:

	Rates			Cost	
	<u>Low</u>	<u>High</u>	<u>Average</u>	<u>1977</u>	<u>1976</u>
Ways and structures	1.23%	10.00%	2.19%	\$496,612,457	\$414,689,941
Equipment	2.00%	18.00%	4.63%	164,280,602	128,075,405
Land	-	-	-	39,455,730	38,584,730
				<u>\$700,348,789</u>	<u>\$581,350,076</u>

(c) Deferred Charges

Certain costs incurred by the Authority, primarily related to the expansion and modernization of the transportation system, as further described in Note 9, have been capitalized. These costs are then amortized by charges to cost of service over the future periods in which the benefit to the Authority is estimated to be realized.

(d) Injuries and Damages

In 1975, the Authority was a self-insurer on claims for injuries and damages to the extent of \$100,000 per accident. In 1976, this self-insurance limit was increased to \$1,000,000 per accident and in 1977 it was further increased to \$2,100,000 per accident. Insurance coverage is carried on claims in excess of that amount up to a maximum limit of \$15,100,000, and in 1977 the Authority became a self-insurer for 15.3% of claims between \$2,100,000 and \$5,100,000, and 15.75% of claims between \$5,100,000 and \$15,100,000.

The Authority accounts for injuries and damages by charges to operating expenses as payments are made except for a public liability fund amounting to \$725,000 at December 31, 1977 and \$250,000 at December 31, 1976 established because of the significant increase in self-insurance limits in those years.

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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 1977 AND 1976

(Continued)

(1) Summary of Significant Accounting Policies (Continued)

(e) Workmen's Compensation Insurance

Effective May 1, 1965, the Authority became a self-insurer on workmen's compensation claims under the workmen's compensation laws of the Commonwealth of Massachusetts to the extent of \$50,000 per occurrence.

In July 1977, the Authority increased its self-insured limit to \$150,000 per occurrence, and 50% of claims between \$150,000 and \$300,000. Insurance coverage is carried on each occurrence in excess of that amount up to a maximum limit of \$4,150,000 per occurrence. The Authority accounts for these claims by charges to operating expenses as payments are made.

(f) Unreimbursed Cost of Service

The legislative act under which the Massachusetts Bay Transportation Authority was established provides, among other things, that the Commonwealth of Massachusetts shall reimburse the Authority for the "net cost of service" as defined. Certain of these amounts reimbursed are then assessed to the 79 cities and towns constituting the Authority. The "net cost of service", as defined, includes a charge equal to the payments made on long-term debt during the period, and does not include a charge for depreciation and certain amortization. For financial reporting purposes however, the Authority follows the generally accepted method of depreciating and amortizing the cost of assets over their estimated useful lives.

The cumulative excess of depreciation and amortization charges over payments made on long-term debt is charged to the unreimbursed cost of service account and is recovered in years when payments made on long-term debt exceed depreciation and amortization. During the years ended December 31, 1977 and 1976 depreciation and amortization charges exceeded payments on long-term debt by \$7,667,418 and \$4,498,811 respectively. The excess of depreciation and amortization charges over payment is due primarily to the start of depreciation charges on construction projects completed and new equipment put into service during those years.

In addition, the "net cost of service" as defined does not include charges for interest expense on the Loans Payable to the Federal Department of Transportation (\$3,257,329 in 1977 and \$1,324,238 in 1976) (Note 11). However, for financial reporting purposes, these amounts have been charged to cost of service, in accordance with generally accepted accounting principles. Interest accrued will be included in "net cost of service" assessable to the cities and towns in the year it is paid.

(g) Grants

The Authority receives capital expansion grants from certain governmental agencies (see Note 8) to be used for various purposes connected with the planning, modernization and expansion of transportation facilities. These grants are deferred

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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 1977 AND 1976
(Continued)

(1) Summary of Significant Accounting Policies (Continued)

(g) Grants - (Continued)

until such time as the related facilities are put into service. The credits are then amortized over the estimated useful life of the assets as a reduction of Unreimbursed Cost of Service. As of December 31, 1977, the Authority had requisitioned but not received capital grant funds totaling \$27,502,683 which will be reflected on the books when received.

(2) Railroad Commuter Subsidies

Under Chapter 161A Section 3(f) of the General Laws, the Authority may enter into agreements with private transportation companies, railroads and other concerns providing for joint or cooperative operation of any mass transportation facility and for operation and use of any mass transportation facility and equipment for the account of the Authority.

In connection with the purchase of certain assets of the Boston and Maine Corporation (B & M) (see Note 11), the Authority entered into a five-year operating agreement with the B & M to provide commuter rail service north and west of Boston ("North Service"). The Authority has agreed to pay the B & M all direct costs of operating the service, plus an equitable share of indirect costs and certain incentive payments.

Rail service was provided by ConRail south and west of Boston (South Service) through March 12, 1977, at which time the B & M was contracted to continue the service with an operating agreement that runs co-terminous with the operating agreement for North Service with similar payment terms.

Section 17 of the Urban Mass Transportation Act of 1964 as amended, authorizes the Urban Mass Transportation Administration (UMTA) to furnish emergency operating assistance for the continuation of certain passenger rail service operated by ConRail as of April 1, 1976 (South Service). The amount of Section 17 subsidy available to the Authority is a percentage of the increased costs of continuing passenger service up to a maximum determined by standards set by the Rail Services Planning Office of the Interstate Commerce Commission.

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NOTES TO FINANCIAL STATEMENTSDECEMBER 31, 1977 AND 1976

(Continued)

(2) Railroad Commuter Subsidies (Continued)

The following percentages apply during the periods indicated:

	<u>Federal Share of Additional Cost</u>
Optional Period I: Sept. 28, 1976 - March 26, 1977	100%
Optional Period II: March 27, 1977 - March 31, 1978	90%
Optional Period III: April 1, 1978 - Sept. 30, 1978	80%
Optional Period IV: Oct. 1, 1978 - Sept. 27, 1980	50%

In the event that the Advisory Board fails to approve the annual budgetary provision for any of this service, these agreements shall terminate subject to certain labor protection obligations and liquidated damages in lieu of incentive payments for passengers carried.

The operating subsidy paid or payable by the Authority for commuter rail service amounted to \$26,691,776 in 1977 and \$17,654,431 in 1976. In 1977 the Authority received \$940,330 in additional charges from ConRail for 1976 commuter rail service which are not reflected in cost of service. The resulting receivable from the Federal Department of Transportation and payable to ConRail, are reflected on the balance sheet as of December 31, 1977. The net cost of commuter rail service after recognition of Section 17 Federal Operating Assistance and reimbursements for contracted service outside the district amounted to \$20,294,128 in 1977 and \$17,349,378 in 1976.

(3) Relocation of Facilities

In April, 1967, the Authority entered into an agreement with the John Fitzgerald Kennedy Library Incorporated, whereby the Authority would relocate certain Transportation facilities in order to convey certain properties to the United States and the Library Corporation.

The Commonwealth of Massachusetts appropriated \$6,098,400 to the Authority for the part of the properties conveyed to the United States. In addition, the Authority received \$1,330,112 from the Library Corporation for the remaining part of the properties, totaling \$7,428,512.

These facilities, having a net book value of \$709,807, have been retired. The amount received in excess of net book value (\$6,718,705), less \$12,000 of expense incurred in connection with the acquisition of replacement property, is included in Deferred Credits on the balance sheet.

In 1975, the replacement facilities were completed and placed in service. Amortization of the deferred credit began in 1975 and amounted to \$167,668 in both 1977 and 1976. The deferred credit is being amortized over a 40 year period (estimated useful life of the facility) and is accounted for as a reduction of the unreimbursed cost of service.

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
RESEARCH REPORT

Submitted by: [Name] Date: [Date]

Advisor: [Name]

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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 1977 AND 1976

(Continued)

(4) Pension

The Authority has agreed to provide retirement benefits to employees through a contributory pension plan which, as currently amended, requires the payment by the Authority of an amount equal to 11-5/8% of the total payroll of the employees who are members of the plan. The cost of the plan to the Authority for the years ended December 31, 1977 and 1976 was approximately \$14,147,504 and \$13,393,955 respectively. The cost in both years is funded currently and includes interest on unfunded prior service costs, but does not include amortization of the unfunded prior service costs. The Authority is not legally obligated, under the agreement, to fund the actuarial cost of future benefits to present and retired employees. The most recent actuarial valuation was made as of December 31, 1976, and at that time, unfunded prior service costs approximated \$129,264,403.

The actuarially computed value of vested benefits, based upon the most recent actuarial report (dated December 31, 1976) was \$216,013,888. As of December 31, 1976, the market value of the fund assets was \$157,582,121 and the computed value of vested benefits exceeded the market value of fund assets by \$58,431,767. The market value of fund assets as of December 31, 1977 was \$159,584,228.

The Authority has also entered into agreements with certain salaried employees to provide supplemental pension benefits after retirement. In order to receive the benefits, the employee must have at least ten years of service and be eligible for retirement under provisions of the contributory pension plan. The annual supplemental benefit paid is equal to 1% of the employee's average annual compensation received during the last five years of service multiplied by the number of years of service, but limited to an amount which, when added to the benefit available under the contributory pension plan, is not greater than 65% of the employee's five year average annual compensation. This 65% limit was temporarily changed to 70% for certain employees retiring between January 1, 1976 and September 1, 1977. At December 31, 1977 approximately 600 employees were either receiving supplemental benefits or will be eligible to receive them upon retirement. The cost of the supplemental pension benefits is funded currently, and includes interest on unfunded prior service costs and amortization of the unfunded prior service cost over forty years. The cost to the Authority of the supplemental pension benefits was \$796,159 in 1977 and \$541,980 in 1976.

(5) Debt Guaranty

The legislative act under which the Massachusetts Bay Transportation Authority was established provides among other things, that if at any time any principal or interest is due on any bond or note issued or assumed by the Authority and funds to pay the same are not available, the Commonwealth of Massachusetts shall thereupon pay over to the Authority the amount required to meet such obligations.

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
RESEARCH REPORT

The following report was prepared by the members of the Department of Chemistry, University of Chicago, during the summer of 1954. It is a summary of the work done in the Department during the summer of 1954, and is intended to be a summary of the work done in the Department during the summer of 1954.

The work done in the Department during the summer of 1954 was of a general nature, and was intended to be a summary of the work done in the Department during the summer of 1954.

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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 1977 and 1976
(Continued)

(6) Plant and Equipment Improvement Program

The Authority's program for mass transportation within the area constituting the Authority involves future total estimated costs of \$1.7 billion. Financing requirements for the program are expected to be met through various sources, including the issuance by the Authority of long-term debt securities. The remaining financing requirements are expected to be met through Federal transit aid, Federal urban renewal funds, interstate transfer funds and relocation cost reimbursements. Currently, the Authority's authorized debt ceiling is \$509,000,000. Of this amount \$120,000,000 may only be issued once, and any bonds maturing or redeemed on or after January 1, 1983 may not be reissued thereby reducing the amount of bonds which may be outstanding at any one time.

Expenditures on the program through December 31, 1977, have been financed through the issuance of \$365,000,000 of Massachusetts Bay Transportation Authority General Transportation System Bonds, and other sources as mentioned elsewhere.

As of December 31, 1977, the Authority had outstanding commitments related to the improvement program amounting to approximately \$297,000,000.

(7) Contract Assistance

The legislative act authorizing the issuance of debt securities currently provides for participation by the Commonwealth of Massachusetts in the payment of annual debt service costs on bonds issued by the Authority as follows: on the \$175,000,000 of bonds issued prior to January 1, 1971, the debt service on \$144,800,000 is eligible for contract assistance at either 90% or 50%, as provided by contract; the annual debt service on \$190,000,000 of bonds issued after January 1, 1971, is eligible for contract assistance at 90%. However, regardless of when issued, contract assistance on debt service will not be extended to over \$377,000,000 at any one time.

In 1976, the Commonwealth enacted legislation which provided the Authority with an additional amount of contract assistance for the cost of service amounting to \$56,950,000. This additional contract assistance is not assessable to the 79 cities and towns constituting the Authority and is applied for assessment purposes as a reduction of all cost items comprising the net cost of service of the Authority. This legislation is pending for 1977 and therefore the Authority has not as yet received additional contract assistance for the cost of service in 1977. If the additional contract assistance is not received, it will increase the amount to be assessed to the 79 cities and towns by \$62,732,000.

In 1973, contract assistance of \$15,051,861 was received by the Authority for funded debt, and in addition \$4,513,946 was paid by the Commonwealth for the Authority as a railroad commuter subsidy (Note 2). These amounts, totaling \$19,565,807 under Chapter 1140 of the Acts of 1973, represent the minimum contract assistance to be paid by the Commonwealth in any subsequent

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
RESEARCH REPORT

1955-1956

The following report was prepared by the members of the Department of Chemistry during the academic year 1955-1956. It contains a summary of the work done in the various laboratories of the Department during the year. The work was done under the direction of the Department Chairman, Professor [Name], and the members of the Department.

The work was done in the following laboratories: [List of laboratories]

The work was done under the direction of the Department Chairman, Professor [Name], and the members of the Department.

The work was done in the following laboratories: [List of laboratories]

The work was done under the direction of the Department Chairman, Professor [Name], and the members of the Department.

The work was done in the following laboratories: [List of laboratories]

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 1977 AND 1976

(Continued)

(7) Contract Assistance (Continued)

calendar year. In 1977 and 1976 the Authority became eligible for \$21,532,455 and \$20,468,582 respectively. In addition, from July 1, 1975 through June 30, 1976, the Authority received contract assistance under Chapter 859 of the Acts of 1975 amounting to 50% of the net additional cost of providing rail service to certain cities and towns outside the district. Chapter 283 of the Acts of 1976 increased this assistance to 75% of the net additional cost for the period July 1, 1976 through June 30, 1977, and Chapter 363A of the Acts of 1977 extended the 75% assistance to June 30, 1978. The assistance under these Chapters amounted to \$501,564 in 1977 and \$519,082 in 1976.

(8) Grants

Under the Urban Mass Transportation Act of 1964, the Federal Department of Transportation has approved for the Authority grants for capital expansion aggregating \$745,199,373. The Authority has received \$263,453,996 of this amount. These funds have been used by the Authority to purchase new equipment and to modernize and expand mass transportation facilities.

Federal grant amortization credited to the unreimbursed cost of service amounted to \$8,269,702 in 1977 and \$6,305,902 in 1976.

Under an agreement between the Boston Redevelopment Authority and the Massachusetts Bay Transportation Authority, the BRA has approved grants aggregating \$12,000,000 in connection with the expansion of mass transportation facilities. The Authority has incurred costs totaling \$11,999,479 related to this agreement. Of this amount the Authority has not as yet been reimbursed by the BRA for \$514,196 which is included in accounts receivable.

During 1975, those facilities for which the BRA grant has partially paid, were opened for public use and capitalized for accounting purposes. In relation to this, BRA grant amortization amounting to \$299,987 in 1977 and 1976 has been credited to the unreimbursed cost of service.

(9) Deferred Charges

Under the original Railroad Contract Assistance Program the Authority incurred costs which totaled \$5,000,000, which are being amortized to cost of service over fifteen years. The amortization amounted to \$325,000 in both 1977 and 1976, and the unamortized balance at December 31, 1977 was \$1,750,000. In addition, in connection with the Authority's acquisition of the Eastern Mass. Street Railway Company in 1968, costs of \$611,362 were not assigned to tangible assets. These costs are being amortized by charges to cost of service over forty years. Amortization in both 1977 and 1976 amounted to \$15,284 and the unamortized balance at December 31, 1977 was \$473,806.

THE HISTORY OF THE UNITED STATES

CHAPTER I

THE DISCOVERY OF AMERICA

1492

Christopher Columbus

On the 3rd of September, 1492, Christopher Columbus, an Italian navigator, sailed from the port of Palos, in Spain, on his first voyage across the Atlantic Ocean. He was accompanied by a crew of 30 men and three ships: the Santa Maria, the Pinta, and the Nina. After a long and arduous journey, he landed on the island of San Salvador, in the Bahamas, on the 12th of October, 1492. This event marked the beginning of European exploration and colonization of the Americas.

1492

Columbus's discovery of America was a pivotal moment in world history. It opened up new opportunities for trade and exploration, and led to the eventual settlement of the Americas by Europeans. The discovery also had significant consequences for the indigenous populations of the Americas, who were often subjected to disease and displacement.

The discovery of America was a result of a combination of factors, including the desire for wealth and power, the quest for new trade routes, and the technological advances of the time.

Since the discovery of America, the United States has grown from a small colony to a powerful nation. It has played a significant role in world history, and its influence is felt around the globe. The discovery of America was a turning point in the history of the world, and it continues to shape the world we live in today.

The discovery of America was a great achievement, and it is a source of pride for the United States. It is a reminder of the courage and exploration of our ancestors, and it is a testament to the power of human achievement.

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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 1977 AND 1976

(Continued)

(9) Deferred Charges (Continued)

Certain other deferred charges principally relating to the expansion and modernization of the transportation system are being amortized by charges to cost of service over twenty years. Amortization amounted to \$598,196 in 1977 and \$446,945 in 1976, and the unamortized balance at December 31, 1977 was \$10,312,615.

(10) Supplementary Operating Expense Information

Operating expenses captioned below consist of the following:

	<u>1977</u>	<u>1976</u>
Transportation services -		
Salaries and wages	\$72,443,622	\$68,608,491
Taxes, including payroll taxes	4,194,427	4,001,804
Fuel	2,813,845	2,720,305
Other	<u>4,816,835</u>	<u>4,080,511</u>
	<u>\$84,268,729</u>	<u>\$79,411,111</u>
Maintenance -		
Salaries and wages	\$31,122,109	\$29,625,916
Materials and supplies	10,684,767	10,251,571
Taxes, including payroll taxes	<u>1,797,612</u>	<u>1,742,721</u>
	<u>\$43,604,488</u>	<u>\$41,620,208</u>
Electric Power -		
Salaries and wages	\$ 3,513,426	\$ 3,718,413
Power purchased	3,121,151	2,615,777
Fuel	7,199,722	6,459,738
Taxes, including payroll taxes	201,979	193,636
Other	<u>248,047</u>	<u>249,118</u>
	<u>\$14,284,325</u>	<u>\$13,236,682</u>

(11) Property Held for Expansion

On January 26, 1973, the Authority purchased 145 miles of the Penn Central Railroad's right of way and related properties in Eastern Massachusetts. This purchase was financed with a \$19.5 million (6.875% interest rate) loan from the Federal Department of Transportation. The property acquired is pledged as security for the loan.

UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

RESEARCH REPORT

NO. 1000

THE REACTION OF HYDROGEN PEROXIDE WITH
VARIOUS METALS AND METAL COMPOUNDS
IN AQUEOUS SOLUTION

BY

JOHN EDGAR HUNT

EXPERIMENTAL		RESULTS	
1. Hydrogen Peroxide	10.0 ml.	1.0 ml. of 1% solution	0.1 ml. of 1% solution
2. Hydrogen Peroxide	10.0 ml.	1.0 ml. of 1% solution	0.1 ml. of 1% solution
3. Hydrogen Peroxide	10.0 ml.	1.0 ml. of 1% solution	0.1 ml. of 1% solution
4. Hydrogen Peroxide	10.0 ml.	1.0 ml. of 1% solution	0.1 ml. of 1% solution
5. Hydrogen Peroxide	10.0 ml.	1.0 ml. of 1% solution	0.1 ml. of 1% solution
6. Hydrogen Peroxide	10.0 ml.	1.0 ml. of 1% solution	0.1 ml. of 1% solution
7. Hydrogen Peroxide	10.0 ml.	1.0 ml. of 1% solution	0.1 ml. of 1% solution
8. Hydrogen Peroxide	10.0 ml.	1.0 ml. of 1% solution	0.1 ml. of 1% solution
9. Hydrogen Peroxide	10.0 ml.	1.0 ml. of 1% solution	0.1 ml. of 1% solution
10. Hydrogen Peroxide	10.0 ml.	1.0 ml. of 1% solution	0.1 ml. of 1% solution

DISCUSSION
The results of the experiments show that hydrogen peroxide reacts with various metals and metal compounds in aqueous solution. The reaction is most pronounced with iron and copper, and less pronounced with other metals. The reaction is also affected by the concentration of the hydrogen peroxide and the metal compound.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 1977 AND 1976

(Continued)

(11) Property Held for Expansion (Continued)

On December 27, 1976, the Authority purchased certain assets of the Boston and Maine Corporation (B & M), including 270 miles of right-of-way, track and related properties and 84 Budd Rail Diesel cars. The cost of \$39.5 million was financed with a \$24,172,750 (8% interest rate) loan from the Federal Department of Transportation secured by the assets purchased, a \$12,261,800 Federal Department of Transportation grant, and \$3,065,450 of local funds.

Of the property purchased, \$22,454,050 is not presently in transit use by the Authority and is being held for future expansion.

Both of the Federal Department of Transportation loan agreements provide for the Authority to repay the principal plus accrued interest at the earlier of (a) ten years from date of purchase, (b) the date a grant agreement for actual construction of mass transportation facilities is made, or (c) the date a decision is made not to use the property for mass transportation. The Penn Central agreement also provides that 75% of the principal shall only be payable out of the proceeds from sale of the property, if sold.

Interest totaling \$8,612,818 (\$3,331,870 in 1977 and \$1,337,128 in 1976) has been accrued in the accompanying financial statements at December 31, 1977.

(12) Federal Assistance (Department of Transportation)

Section 5 of the Urban Mass Transportation Act of 1964, as amended by the National Urban Mass Transportation Act of 1974, provides a six year mass transportation assistance program for urbanized areas apportioned on the basis of a statutory formula. Urbanized areas may use Section 5 funds by developing a specific capital assistance and/or operating assistance projects under the statutory requirements of the Act, as defined. The Authority has been designated the primary recipient for the Section 5 operating subsidy funds for the Boston Urbanized Area. The projected apportionment for the six year program for the Boston Urbanized Area, limited by the availability of these funds, is as follows:

<u>Period in Which Assistance Becomes Available</u>		<u>Projected Amount of Assistance Available</u>
Nov. 26, 1974 - June 30, 1975		\$ 6.5 Million
July 1, 1975 - June 30, 1976		10.9 "
July 1, 1976 - Sept. 30, 1977		16.9 "
Oct. 1, 1977 - Sept. 30, 1978		16.9 "
Oct. 1, 1978 - Sept. 30, 1979		18.5 "
Oct. 1, 1979 - Sept. 30, 1980		<u>16.9</u> "
Total		\$86.6 "

During 1977, the Authority applied for and received \$16,861,566, the entire amount of operating assistance funds available for the period beginning October 1, 1977.

MEMORANDUM FOR THE RECORD

DATE: 10/10/54

TO: THE DIRECTOR

FROM: MR. [Name]

On 10/10/54, [Name] was interviewed by [Name] and [Name] regarding [Topic]. [Name] stated that [Name] had been contacted by [Name] on 10/10/54 and that [Name] had been advised that [Name] was being interviewed by [Name] and [Name]. [Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name]. [Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name]. [Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name].

[Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name]. [Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name]. [Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name]. [Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name]. [Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name].

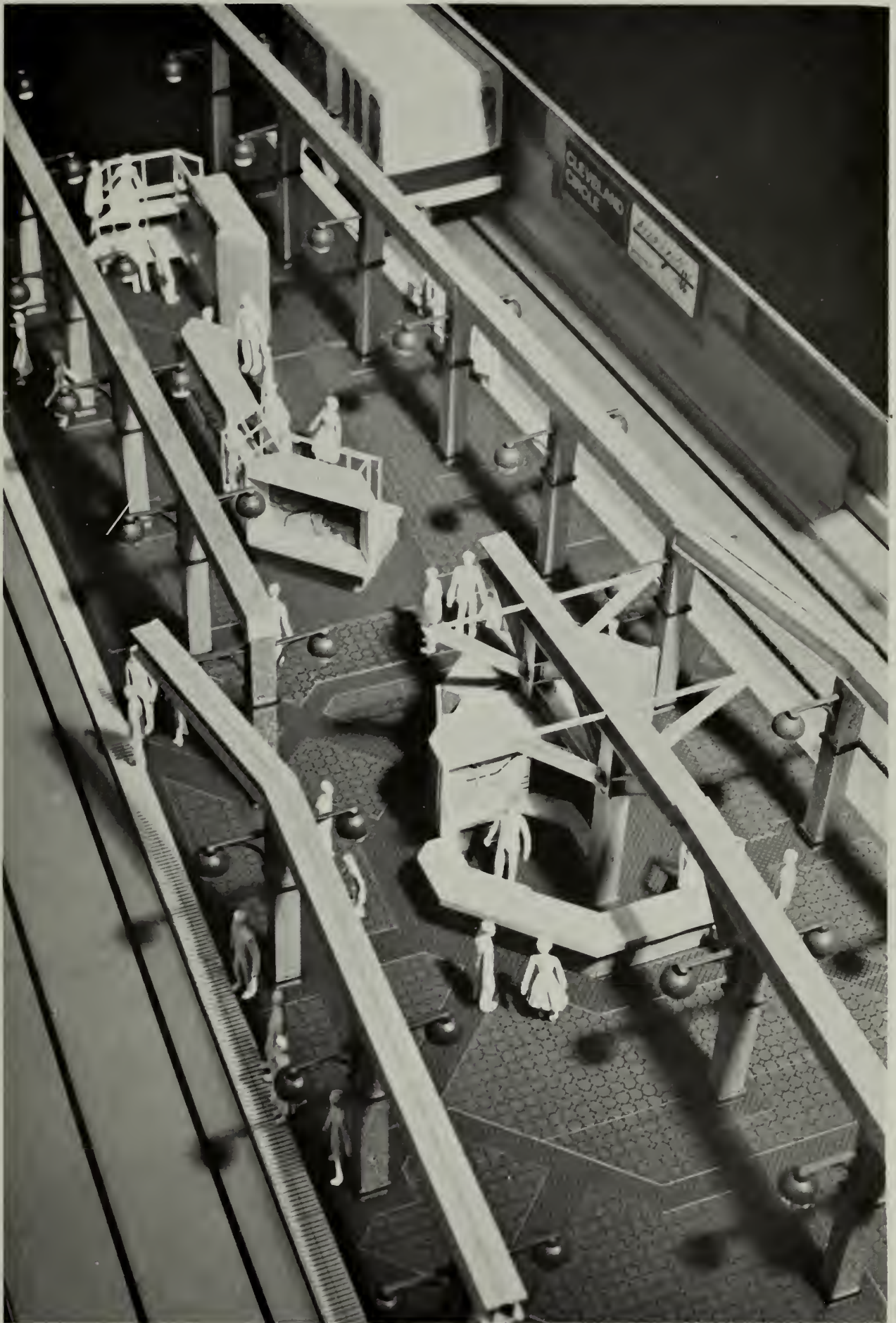
[Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name]. [Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name]. [Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name]. [Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name]. [Name] stated that [Name] had been advised that [Name] was being interviewed by [Name] and [Name].

Very truly yours,

[Name]
[Title]
[Address]
[City]
[State]
[Zip]

[Name]
[Title]
[Address]
[City]
[State]
[Zip]

[Name]
[Title]
[Address]
[City]
[State]
[Zip]



MODERNIZED PARK STREET STATION on the Green Line is shown in this model. The station modernization project, about 45 percent completed at year's end, is scheduled to be finished in the Spring of 1979.

NOTE:

ON DECEMBER 7, 1977 THERE WERE 22,404 HOLDERS OF PREPAID PASSES.
THIS AMOUNTS TO AN ESTIMATED (44,808) PASSENGERS PER DAY, NOT INCLUDED
IN TOTALS BELOW.

